

When Systems Fail: A Critical Analysis of Valencia's 2024 Flood Response

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1. INTRODUCTION

In late October 2024, the Spanish city of Valencia experienced a severe Cold Drop phenomenon (*Depresión Aislada en Niveles Altos, DANA*), resulting in catastrophic flooding that tested both the institutional response mechanisms and the community's resilience. This extreme weather event, characteristic of the Mediterranean region, brought unprecedented rainfall and subsequent flooding, causing significant infrastructure damage and disruption in daily life across the region.

The events concentrated storms in the basins of the Magro and Turia rivers and in the Poyo ravine – where closeby localities received more than 630 L/m² in less than 24 hours– causing a wall of water that overflowed the riverbeds, catching civilians off guard (RTVE, 2025). In the blink of an eye, water and mud covered roads and railway tracks, and entered homes and businesses in towns along the southern periphery of Valencia. When authorities sent the phone alert warning the population about the severity of the situation, many were already on the road, working or surrounded by water in low-lying areas or garages, which became death traps. This inadequate response to the crisis led to 224 victims (RTVE, 2025).

The management of this crisis, rated level two on a scale of three by the Valencian government, was in the hands of regional authorities, who could request help from the central government to mobilise resources. At the appeal of the Valencian president Carlos Mazón, from the conservative party PP, and PSOE¹ socialist government president Pedro Sánchez announced the shipment of 5,000 soldiers as of 30 October 2024 to join rescue operations, debris cleaning and supply distribution over the first weekend after the catastrophe (The Associated Press, 2024). However, when many of the affected people expressed their feeling of abandonment by authorities, a wave of volunteers took the streets to help. Equipped with brooms, shovels, water and basic food supplies, thousands of people walked several kilometers in the days after the event to distribute supplies and assist in cleaning the affected areas.

¹ The Popular Party *Partido Popular* (PP) is a Spanish political party with a conservative and liberal ideology, playing a prominent role in the country's politics since its founding in 1989. It currently governs the Valencian Community as an autonomous region. On the other hand, the Spanish Socialist Workers' Party *Partido Socialista Obrero Español* (PSOE) is a social-democratic and progressive political party, founded in 1879, and it currently holds the power in the Government of Spain.

Many journalists, politicians and the citizens have since criticised the Valencian government for the delay in sending Emergency Cell Broadcast alerts, which arrived at 8pm on Tuesday 29th of October 2024 when some towns had already begun flooding, more than 12 hours after the AEMET (Spanish Meteorological Agency) declared a red alert for rain.

The floods highlighted the complex interplay between institutional disaster management and community-based response networks, raising important questions about emergency preparedness and social resilience in the face of environmental disasters.

The criminological relevance of natural disasters extends beyond their immediate physical impact, touching upon fundamental issues of social order, institutional trust and systemic inequalities. As Tierney (2006) argues, natural disasters often expose deep-seated inequalities in accessing safety and justice, making them particularly pertinent to criminological papers. Often, these events can lead to significant social disorganization, that will not only generate fear, but also infrastructure damages and often deaths (Fritz, 1961; Quarantelli & Dynes, 1977). Furthermore, institutional responses – or the lack thereof – can create conditions that exacerbate social harms. The failure to provide timely aid or clear communication, as well as not providing future guidance, might lead to a loss of trust in authorities. Recent academic discourse surrounding natural disasters and their social implications remain divided, with some scholars suggesting that these events can trigger cycles of social tension (Omelicheva, 2011), while others, like Slettebak (2012), propose they might actually mitigate political violence through increased social cohesion.

This research aims to examine the complex dynamics between institutional responses and community networks in managing the Valencia DANA floods of 2024. A particularly interesting matter is how these interactions influenced the effectiveness of emergency management and subsequent recovery efforts. This study pays special attention to the role of digital platforms in crisis communication and community mobilization, exploring how both institutions and individuals utilised these tools during the disaster response phase. Furthermore, it will try to explore the relationship between natural disasters and systemic failures, which can lead to secondary victimization, where vulnerable people affected by the disaster find themselves without help from their municipalities.

The main research question guiding this investigation is:

How did the interplay between institutional response and community networks influence the effectiveness of emergency management during Valencia's flood event?

This central inquiry is supported by two key sub-questions:

- a) How did the local government, emergency services, and other institutions respond to the Valencia flood disaster in terms of mobilising resources, communicating with the public, and coordinating relief efforts?
- b) To what extent did perceived failures or shortcomings in the institutional response impact public trust in local authorities during and after the DANA disaster?

Through a mixed-methods approach combining a qualitative interview with social media discourse analysis, this study seeks to contribute to our understanding of disaster response dynamics and their implications for social harm.

2. METHODOLOGICAL APPROACH

The study employs a qualitative multi-method approach combining semi-structured interviews with social media critical discourse analysis (CDA) to examine institutional and community responses to the 2024 Valencia DANA floods. These methods are grounded in epistemological and theoretical frameworks emphasizing the social construction of disasters and the dynamics of institutional trust and community resilience.

The study's research paradigms aligns with Dawadi et al.'s (2021, p.25) definition of a researcher's philosophical view concerning truth, reality, and the research issue. It incorporates ontological and epistemological assumptions guiding this investigation, recognises the socially constructed nature of knowledge and reality (Cohen et al., 2007). This perspective is particularly relevant in disaster studies, where institutional actions and public perceptions are deeply intertwined. Based on these purposes, this paper adapts multiple approaches to understand Spanish institutional responses.

The qualitative, multi-method research incorporates an interview and critical discourse analysis to address the research questions comprehensively. The integration considers epistemological and ontological approaches to ensure methodological coherence and avoid potential incompatibilities between methods (Pinto-Llorente et al., 2021, p.63). Additionally, the interview will have a semi-structured form in order to have bigger flexibility that will allow the participant to narrate the experience without feeling strong pressure. It is also important to mention that the *critical* variant of the discourse analysis is chosen as Fairclough (2010) explains that it requires specific attentiveness on dominant representations, and how seemingly individuals, in this case, are imbued with the influences of political and institutional order. Also, as cultural controls of reality, discourses on power, representing certain accounts as truth, that emphasizes the perspectives of power struggles (Petintseva, 2022, p. 2).

The rationale for this multi-method design serves two central purposes. First, the complementarity of these methods lies in their ability to address different but interconnected aspects of the research problem. The interview focuses on personal experiences and subjective interpretations, while the CDA provides a critical examination of institutional and public

discourses. As Justesen & Mik Meyer (2012) argue, using multiple qualitative methods based on the same epistemological perspective strengthens research quality by allowing different angles and nuances to emerge (Essén & Sauder, 2017). This integration will enrich the findings and enables me to present a more holistic view of the flood response dynamics. Second, the concept of triangulation is central to this methodological design. This involves combining multiple methods to examine the same phenomenon, thereby enhancing the credibility and validity of the findings. That is to say, using different qualitative methodological approaches to provide knowledge that otherwise is inaccessible to the topic. Further, Esterberg (2002, p.37) emphasizes that “research designs that include multiple research strategies as the strongest ones”.

In addition, Kopinak (1999, p.171) explores how triangulation also helps in verifying consistency and reliability. By integrating the social media posts and the interview narratives, the study will capture both subjective and structural dimensions of disaster responses. Interestingly, this method not only increases the internal validity of findings but also enhances the robustness by enabling researchers to identify convergence or divergence across data sources (Meijer et al., 2002, p.146). Also, the cross-references and multiple institutional authors accounted for in the CDA will add depth to the analysis, ensuring that findings are not solely reliant on a single data source or account.

It must be noted that this paper contains subjective elements due to the nature of the research. As the researcher, my decisions will shape various aspects of the study, and these choices will inevitably influence the research outcomes. The following methods will not only involve the production of analytical accounts to better understand the DANA flood disaster, but also how the investigation was conducted. As Mauthner and Doucet (2003:414) note, “many methodologies are often presented as neutral, mechanical, and decontextualised processes”. In response, this research consciously integrates empirical and methodological considerations alongside theoretical perspectives and supporting literature. By engaging with my positionality, ethics and personal and political perspectives, this paper situates itself within a reflexive framework that acknowledges the interplay between researcher and research.

2.1. *Semi-structured Interview*

2.1.1. Participant Selection and Interview Design

This study incorporates a single in-depth interview with a resident from Valencia's flood-affected zone, specifically selected based on his direct experience with both the DANA floods and the subsequent institutional response. The participant, a 25-year-old student from the Campanar district, a known relative from my mother's family, was initially contacted via email with a detailed explanation of the research objectives and protocol. The selection criteria prioritised an individual who experienced significant interaction extensively with both institutional aid services and community support networks, enabling a rich narrative of the disaster response dynamics.

The interview follows a structured yet flexible design that allows for organic conversation while ensuring comprehensive coverage of key research themes. Drawing from Wincup's (2017) approach to qualitative research in criminology, the interview structure comprises four interconnected sections: initial disaster experience, institutional response assessment, community impact and recovery, and future recommendations. Each section begins with open-ended questions before moving to more specific inquiries, allowing the participant to first share the narrative freely before addressing particular aspects of the experience.

To conduct the interview I will employ various probing techniques to elicit detailed responses from the participant. Since initial answers often remain superficial, I will use targeted follow-up questions to gain deeper insights into the participant's perspectives. This approach will help show the underlying factors that shape their responses, including their reasoning, emotions, personal views, and core beliefs (Legard et al., 2003, p.141).

2.1.2. Data Collection Process

The interview will be conducted via secure video conferencing using Google Meet, chosen for its end-to-end encryption and reliable recording capabilities. A backup recording device will capture audio independently to guard against technical failures. The session is scheduled for 90 minutes, with an additional 30-minute buffer to ensure unhurried discussion of

sensitive topics. Prior to the interview, a test call will be conducted to verify connection quality and familiarize the participant with the platform. All digital data will be stored on an encrypted drive, with backup copies maintained according to university data protection protocols.

Furthermore, as the interview will be conducted in Spanish, a rigorous translation and transcription protocol is implemented. The interview will be audio-recorded with participant consent and transcribed verbatim in Spanish before being translated to English. To ensure accuracy and maintain cultural nuances, due to Spanish-Valencian-English words.

2.1.3. Ethical Considerations

The ethical framework for this interview prioritises participant wellbeing and data protection at every stage. Prior to the interview, the participant will receive a detailed information sheet explaining the research objectives, interview process, and their rights, including the right to withdraw at any time. Written, informed consent will be obtained for both participation and audio recording.

Given the potentially traumatic nature of disaster experiences, I have developed a protocol for handling emotional distress during the interview. This includes identifying appropriate moments for breaks, as well as having contact information ready for local support services.

2.2. Critical Discourse Analysis

This study selected *X* (formerly Twitter) as the primary platform for analysing institutional and community discourse during the DANA floods. The choice was made for several key reasons. First, *X* serves as a primary communication channel for government agencies and emergency services in Spain, with official accounts providing critical updates during crises. This is because people follow political actors on *X* as they find it convenient, for entertainment, self-expression, guidance, information-seeking and social utility (Parmelee & Bichard, 2011, p.207). Second, the platform's public nature and dialogic features enables examinations of how institutions construct their messages and how these messages interact with public discourse (Bachstein, 2015, [Preliminary Findings section]). Also, *X*'s architecture, which allows immediate responses and message chains, provides rich contexts for analysing power relations and communication dynamics between the government and institutions with the public (Wigand, 2010, p.566).

2.2.1. Data Collection Strategy

The data collection will focus on the period from October 29, 2024 (the onset of the DANA event), through November 15, 2024. This timeframe has been chosen to capture not only the immediate onset of the floods but also the initial recovery period, capturing the complete narrative arc of the crisis.

The dataset focuses primarily on communication from the President of the Generalitat de València (Carlos Mazón @carlos_mazon_) and from the President of the Spanish Government (Pedro Sánchez @sanchezcastejon). Also, the paper will analyse three key institutional accounts: the *Generalitat Valenciana* (@generalitat) as the primary governmental body from València, the emergency services account *Emergencies 112CV* (@GVA112), and the regional meteorological service *AEMET Comunidad Valenciana* (@AEMET_CValencia).

For the analysis, I selected the most relevant replies to tweets that contained meaningful information, as the majority of the posts were filled with offensive language and insults. By focusing on tweets that provided opinions and insights aligned with the study's objectives, I was

able to ensure that the analysis centered on content that contributed to the understanding of the issue.

2.2.2. Sampling Approach

The method used to save posts from X was suboptimal and time-consuming. While the ideal approach would have involved using a Python scraping library to extract tweets directly from Twitter's API² through a developer account, this method was not feasible for this study. The reason is that the Twitter API's free tier restricts access to tweets posted within 7-9 days after being posted, and the data collection started at the beginning of December. Therefore, I planned a different approach to the initial data gathering phase.

I started by saving all the posts in X bookmarks and then exporting them to Notion, an online platform that then allowed me to download all the posts as a .csv file. After having all the posts in a structured format, organised by their author/institution, I used Anthropic's Claude 3.5 Sonnet to clean and tag the dataset. To carry out the analysis, I used Google Colab, an online Python runtime that leverages the flexibility of Jupyter Notebooks to allow users to develop complex scripts collaboratively, including data cleaning and transformation, statistical modeling and data visualization (Naik, 2023, p.3). The Python code for this Google Colab notebook was developed with the assistance of Sonnet, which provided support with the syntax and debugging. The analysis pipeline begins with data splitting using the Pandas library, which enables importing the raw CSV dataset containing both the tweets from government and emergency services accounts along with public responses.

² Twitter allows downloading their users' data with some restricted permissions using the Application Programming Interfaces (APIs). These APIs are an enhanced version of the software that behaves as a back-end interface to collect data (Sohail et al., 2021).

Image 1. Example of how the dataset divides original posts by @carlos_mazon_ and the corresponding replies from the public.

	content	type \
0	Please, let's follow the information from offi...	X Original Post
1	The Valencian Emergency Unit that you dismantl...	X Reply
2	You destroyed the emergency unit, incompetent....	X Reply
3	Emergencies that don't manage emergencies. You...	X Reply
4	The GV forest firefighters are ready and avail...	X Reply
5	The 112 is not collapsed. If you can't get thr...	X Original Post
6	In four hours they haven't answered calls to 1...	X Reply
7	It's important that the message is unified. Fo...	X Original Post
8	Just saw this from Mazón, incredible, not only...	X Reply
9	Science and common sense say: -Anthropogenic c...	X Reply
10	The Valencian Government will implement a firs...	X Original Post
11	Regarding the red alert declared this afternoo...	X Original Post
12	Important notice. Following Cecopi agreement a...	X Original Post

For the systematic tagging of the data, relevant posts are identified through crisis-specific keywords and phrases in both Spanish and Valencian, such as “*DANA*” (Cold Drop), “*inundaciones*” (floods), “*emergencia*” (emergency), “*plujes torrenciales*” (torrential rains), “*solidaritat valenciana*” (valencia solidarity). This data collection will be performed for each of the individuals and organizations selected.

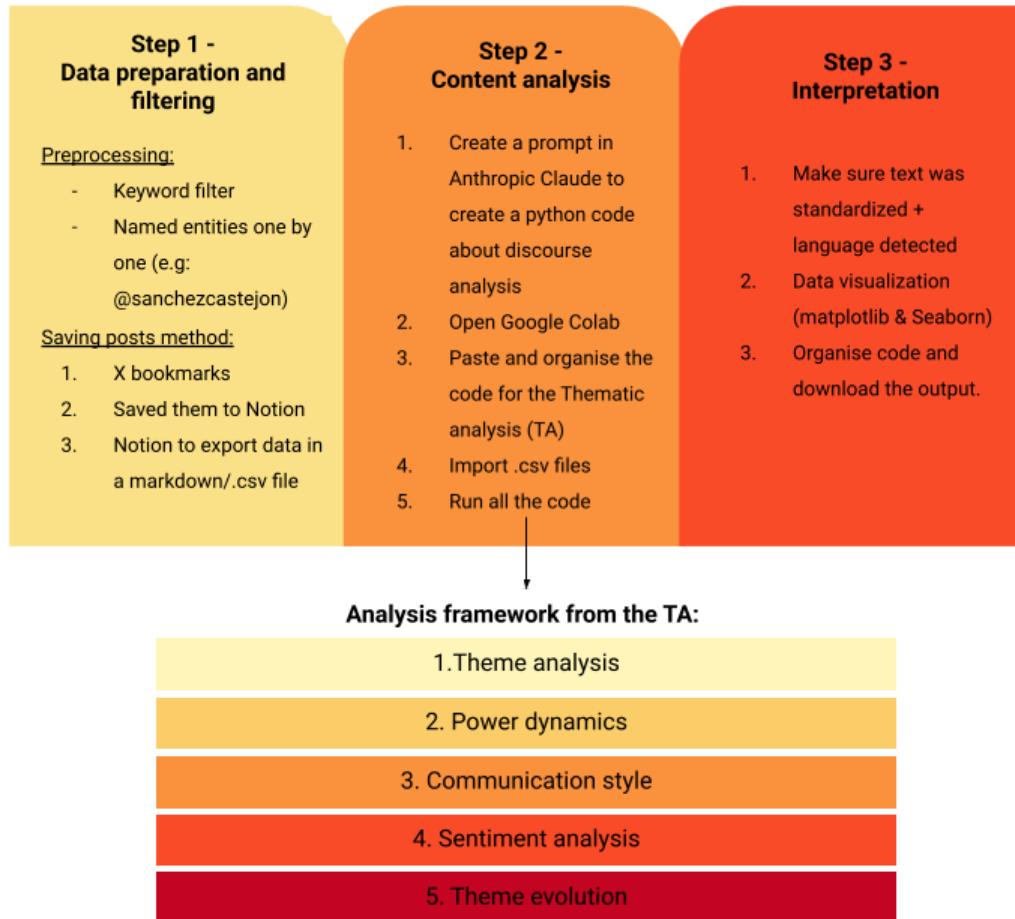
The thematic analysis framework was structured around 5 key sections:

- | | |
|------------------------|-----------------------|
| a) Theme analysis | d) Sentiment analysis |
| b) Power dynamics | e) Theme evolution |
| c) Communication style | |

These themes were specifically chosen to align with the research question regarding institutional response and community networks. The implementation of a keyword-based thematic analysis through Python's Natural Language Toolkit (NLTK) and custom dictionaries allows for systematic identification of how different actors communicated about these critical aspects of the crisis. Using TextBlob and NLTK's SentimentIntensityAnalyzer modules, sentiment analysis was incorporated to examine the emotional undertones of communications from both governmental sources and public responses. This analytical choice was particularly important for understanding how institutional communications were received by the public and identifying potential disconnects between official messaging and community needs.

Moreover, in order to create informative visualizations of the analysis, I followed an integrated approach combining matplotlib and seaborn libraries. (Han & Kwak, 2023; Hafeez & Sial, 2021). Data validation and quality assurance were built into the processing pipeline through error handling and data consistency checks. The entire analytical process was documented within the Google Colab notebook³ with in-line comments, ensuring methodological transparency and reproducibility. This systematic approach enabled a robust examination of the communication dynamics between institutional actors and the public during the DANA flood crisis, while maintaining analytical rigor and methodological clarity.

Figure 1: Diagram of the topic analytic framework developed in this study (made to ensure clarity).



Source: Own elaboration

³ Please refer to Appendix 2 to see the Python data codings.

Given the bilingual nature of the original dataset (Spanish and Valencian), the text was translated into English to ensure consistency and compliance with the limitations of the libraries used for analysis. Additionally, to uphold the integrity of the discourse analysis, complete conversation threads were archived as screenshots, preserving the original context and the sequential order of communications.

2.2.3. Ethical considerations

To ensure the privacy and security of the individuals involved, all tweets were anonymised, as many tweets expressed anger and included insults directed at the government. This was implemented by stripping the data of all information that could allow for the identification of the poster to protect their identity, aligning with ethical considerations and safeguarding confidentiality.

3. RESEARCH FINDINGS

3.1. Interview Analysis

This section provides an in-depth analysis of the semi-structured interview conducted with the Valencia resident affected by the DANA. The study focuses on different key aspects that will provide insights and help contextualize the interplay between institutional and community situations.

Finding 1: Initial Warning and Emergency Response

There appear to be significant failures in the early warning system. Despite existing weather alert mechanisms, they proved to be inadequate for communicating the severity of the incoming disaster. As the interviewee pointed out: “*although there was an alert, we simply knew it would be a rainy day (...)*”. This highlights the normalization of warnings and the potential desensitization of residents to official alerts, an issue that may have contributed to delayed community preparedness. This finding aligns with Tierney’s (2006, p.117) argument that inadequate and vague warnings often result in a false sense of security, leaving communities unprepared for the actual scale of a disaster. Furthermore, Vaughan’s (1996, ch.4) theory of normalization of deviance illustrates how societies may become desensitised to risks over time (Cullen & Wilcox, 2025, p.6). This emphasizes that when harm occurs, the focus should not be on blaming an individual or scapegoating the last link in a faulty process. Instead, investigations should delve deeper into examining the underlying system or process as a whole (Price & Williams, 2018, p. 2). This perspective aligns closely with the participant’s experience.

As the day progressed (Oct 29, 2024), the participant observed significant changes in the environment: “*water was flowing through the street almost like a river, and the drains started overflowing*”. This transformation of their surroundings created a sense of urgency and vulnerability, exacerbated by the lack of immediate guidance or support. However, the institutional responses demonstrated concerning delays. The interviewee said “*the central government was practically only heard from the next day, after the morning when we were cleaning and rebuilding*”.

Finding 2. Communication and Information Flow

The participant's testimony led to an evaluation of the institutional responses, highlighting significant gaps in disaster preparedness and management. The contestant described the initial government response as "*non-existent*" and criticised the lack of proactive measures: "*they did not even have information about whether it would get worse or better, when it would stop, or which streets were open*". Moreover, the quality and reliability of official information emerged as a major concern, but at the same time, there was an absence of real-time updates reflecting a critical communication failure that left residents uninformed and unprepared.

Finding 3. Institutional Coordination and Response

Also, there have been significant issues in coordination between different levels of government. As described by the interviewee: "*the two administrations, the community and the central government, which are of opposing political colours, both were lamentable*". It is inevitable to argue that this political fragmentation between PP and PSOE appeared to directly impact response effectiveness. The respondent described the situation as "*passing the hot potato from one to another*". This crisis management shows how political competition often undermines disaster response effectiveness (Boin & Hart, 2010). This perception of disjoint efforts underscored the need for improvement in intergovernmental collaboration during disasters. The critique of political motivations "*they did now want to take the blame for fixing the community government's mess*" further highlighting the impact of administrative inefficiencies on public trust.

The participant also expressed frustration over the delayed deployment of not only emergency services, but also in mobilised available resources: "*what was needed would have been an immediate emergency service to try to rescue these people (...) these resources weren't mobilised much, much earlier.*" The interviewee emphasized that the necessary equipment existed but wasn't deployed effectively: "*They have the infrastructure, they have the machines, the bulldozers, the construction equipment - there's no need to buy anything.*".

Finding 4. Community Response and Networks

Community-based responses emerged as a cornerstone of disaster management. Residents and community networks were incredibly relevant in providing timely and practical support. Volunteers were among the first to mobilise, bringing essential supplies “*like water or baby bottles*” and helping clear debris: “*The first to arrive were volunteers with all-terrain vehicles and excavators*”, said the respondent. This rapid grassroots response filled the void left by institutional delays, demonstrating the resilience and resourcefulness of local communities. Other scholars support this finding by noting how social networks are crucial for effective disaster response, emphasizing the importance of community readiness (Aldrich, 2012, p.38).

Finding 5. Long-term impacts and Trust

The participant highlights the critical role of solidarity, noting:

“When things get difficult, when lives and people's health are at stake, the only thing you can trust in is people – not collectives, not institutions, not administrations”.

This sentiment reflects a shift in trust from formal institutions to informal networks of individuals and groups. Community-led initiatives, such as distributing food and checking on vulnerable and older residents, were instrumental in addressing immediate needs and restoring a sense of normalcy. This erosion of trust might have long-term implications for community-institution relations, as residents increasingly rely on themselves and local networks rather than on external authorities.

Furthermore, Geographer Ben Wisner suggests that the secret to successful disaster management lies in recognising that “one cannot ‘fix’ disaster risk with technology alone. It is also a matter of enacting and enforcing laws, building and maintaining institutions that are accountable, and producing an environment of mutual respect and trust between government and the population.” (Messer, 2003, p.37). However, the systematic neglect of infrastructure maintenance undermines this principle. The participant described how the protections built to mitigate floods had fallen into disrepair: “*many infrastructures had been built to prevent or mitigate it – ravines, dams... These are things that they've stopped maintaining.*” This highlights

the urgency for long-term investment in robust infrastructure to rebuild trust and ensure preparedness.

Finding 6. Future Implications and Recommendations

Timeliness and coordination in emergency responses were recurring themes. "*Time is key... you have to respond quickly for people who are trapped in problems, try to rescue as many as possible,*" the interviewee asserted. The delay in deploying resources, particularly heavy machinery, left many areas inaccessible and likely contributed to avoidable fatalities. As Chen et al. (2013) evidenced, the critical importance of response speed in reducing disaster casualties. Enhanced communication systems, both within and across government levels, would further streamline emergency responses, he also noted the importance in integrating modern technology: "*what needs to be done is build modern infrastructure that gives real-time information to people and in case it overflows, automatically alerts people by phone.*" Such systems could help prevent future disasters from escalating into crises.

3.2. Critical Discourse Analysis

This section presents the findings from the critical discourse analysis of social media communications. It spans 200 interactions in total, 115 (57.5%) from government sources and 85 (42.5%) from public replies.

Table 1: Tweet Distribution by Account

Account	Government Posts	Public Posts	Total Posts
Pedro Sánchez's @sanchezcastejon	15	30	45
Carlos Mazón @carlos_mazon_	50	30	80
AEMET @AEMET_CValencia	20	8	28
Generalitat @generalitat	7	8	15
Centre Coordinació Emergències @GVA112	23	9	32
	115	85	200

The analysis has been divided into sections to explore each topic in depth.

3.2.1. Institutional Response and Resource Mobilization

The institutional response revealed a hierarchical structure across multiple governmental levels. The primary governmental actors – including the President of the Generalitat (@carlos_mazon_), the Spanish President (@sanchezcastejon), and emergency services (@GVA112 and @AEMET_CValencia) – demonstrated varying approaches to crisis communication. The government's communication strategy showed a predominantly top-down approach, with official channels (@AEMET_CValencia, @generalitat and @GVA112) serving as primary information disseminators.

The discourse patterns suggest that institutional posts focused on 2 main areas:

(1) Emergency alerts and immediate response coordination dominated the early phase of the crisis, with @AEMET_CValencia providing technical updates about the weather situation. This demonstrated a clear institutional framework for initial crisis communication. Further, the public appeared to be extremely empathetic and grateful for their work:

I think it is tremendously unfair what you are putting up with, masters of everything, disciples of nothing. For my part, thank you for your work.

[Translate post](#)

9:48 AM · Nov 4, 2024 · 642 Views

You have saved many lives, you can be proud. Ignore these agitators who are mentally handicapped, all they want is noise.

12:19 pm · Nov 4, 2024 · 112 Views

You have done great from the first minute. Thank you, from the bottom of my heart.

9:54 am · Nov 4, 2024 · 838 Views

(2) Resource mobilization communications followed a structured pattern, with @sanchezcastejon and @carlos_mazon_ frequently highlighting deployment of emergency services and coordination efforts. However, the temporal analysis shows gaps between official announcements and the actual delivery of services, as reflected in the frustrated public responses. Here is an example:



...

Thanks to all the public servants and the thousands of volunteers who, in tragedies like the ones we are experiencing, are the example of solidarity and the limitless dedication of Spanish society. I have just visited the facilities of the Directorate of @civilprotection to closely monitor the coordination efforts with the various Public Administrations and other bodies involved in the management of the DANA. I repeat, whatever help is needed, for as long as it takes.

11:53 am · Nov 1, 2024 · 1.1 M Views

Some replies to the post include:

Send in the army now! Less talk and more action! We're talking about living beings!

11:55 am · Nov 1, 2024 · 4.338 Views

You are 3 days late... But you did it really quickly to control RTVE, first thing in the morning after everything that happened the night before.

1:32 pm · Nov 1, 2024 · 75.3 thousand Views

It is only 2% of our army that you are sending to help. What is it that is so important that the other 98% of our Armed Forces are doing that they are not being sent to help? !?

11:29 am · Nov 1, 2024 · 37.7 thousand Views

3.2.2. Power dynamics and Communication style

The power dynamics during the Valencia flood event manifested in several distinct layers, reflecting the interplay between various institutional authorities and their communication strategies. At the national level, Pedro Sánchez @sanchezcastejon primarily focuses on resource allocation and broad policy decisions. His tweets demonstrated a pattern of strategic messaging that emphasizes governmental authority while attempting to build public confidence. His communications maintained a formal, policy-oriented tone while focusing on national unity, such as:



Pedro Sánchez @sanchezcastejon

...

The State is all of us. The Government is doing what it needs to do: reconstruction, response and relaunching of the areas affected by the DANA. More science and fewer climate change deniers.

3:08 pm · Nov 11, 2024 · 634.2 thousand Views



Pedro Sanchez ✅
@sanchezcastejon

...

He@EIBis preparing a first financial package of 900 million euros to support the recovery and reconstruction of the areas affected by the DANA. Thanks for the excellent disposition and the rapid response of the European institutions and, very especially, to@NadiaCalvino for their commitment and hard work, side by side with the Government of Spain. Europe is with Spain.

This exemplifies the national-level communication pattern with: (1) policy announcement, (2) institutional coordination and (3) unity message.

On the contrary, Carlos Mazón (@carlos_mazon_) played a pivotal role in the power hierarchy because his communication revealed a complex balancing act between asserting regional autonomy obligations and acknowledging reliance on national resources. This regional authority positioned himself as a direct advocate for local needs, showing upholding needs and support in the institutional authority. Furthermore, his communication style tried to be a compromise between formal institutional voice and community engagement, for example:



Carlos Mazón ✅
@carlos_mazon_

...



5,000 military personnel and 2,100 technical means.



1,700 firefighters,



1,800 police officers and 2,750 Civil Guard officers, together with 440 members of the various local police forces.



23 arrests for looting (16 in Bonaire). We are making progress in the repair of supplies:

10:45 pm · Nov 3, 2024 · 143 thousand Views

Some replies to the post include:

It's Sunday and almost Monday, Carlos. I think they're very, very late.
You're an accomplice.

11:22 pm · Nov 3, 2024 · 624 Views

Not enough!!!!

7:39 am · Nov 4, 2024 · 7 Views

All of this might not have been necessary if you had raised the alarm at
7:15 a.m. on Tuesday morning instead of 8:12 p.m. when we were all
already covered in water above our heads.

11:15 pm · Nov 3, 2024 · 1.097 Views

Going deeper, it is also relevant to compare how both politicians were seen from the public replies. The following figures allow for a visual representation of their discourse usage.

Figure 2: Pedro Sánchez discourse usage and comparison with public responses

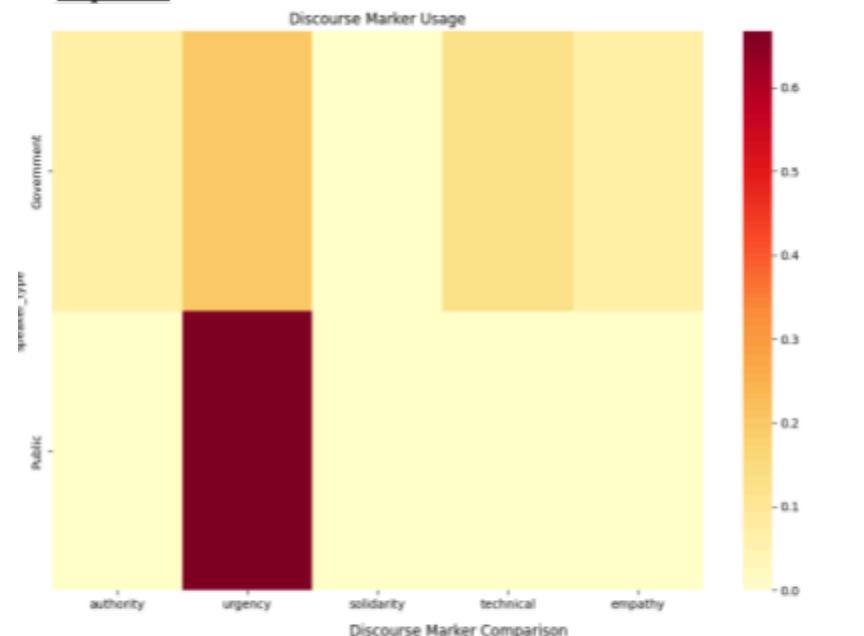
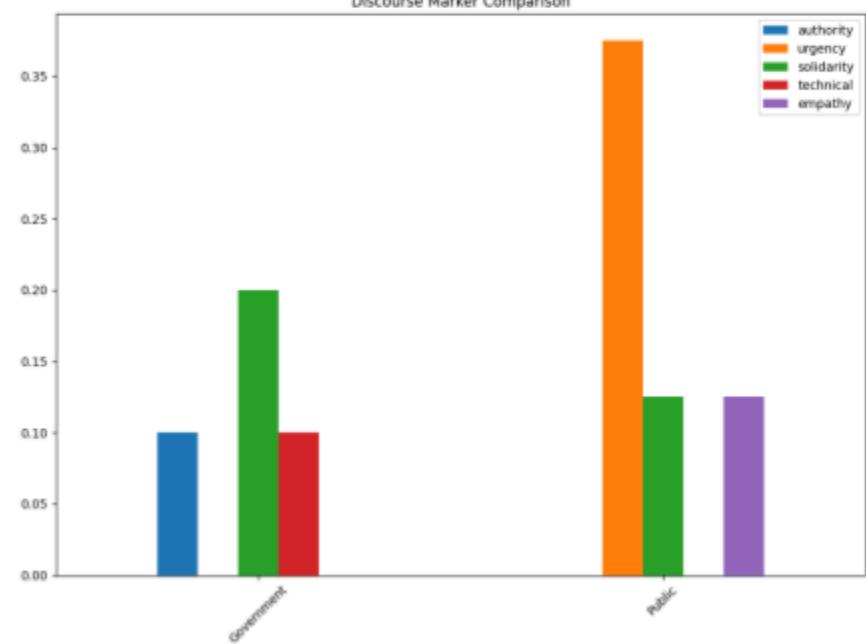
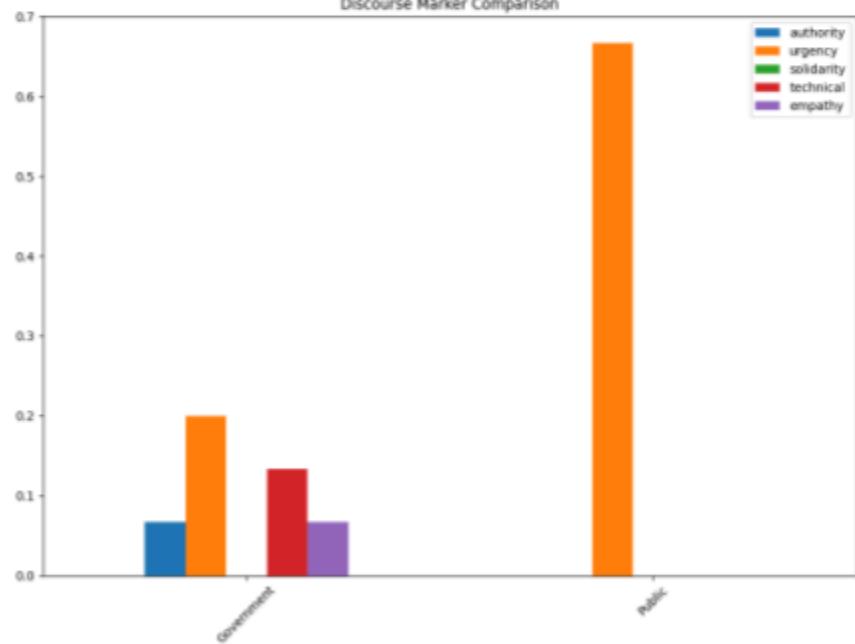
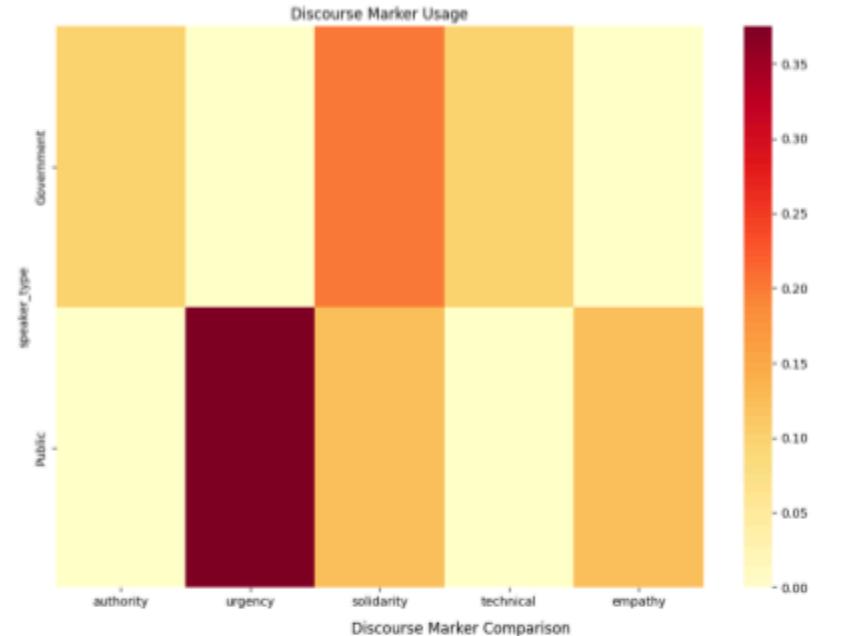


Figure 3: Carlos Mazón discourse usage and comparison with public responses



Examining Figure 2, it becomes evident that Pedro Sánchez's communication patterns emphasize "authority" and "urgency", as indicated by the darker colors. However, urgency is particularly prominent, showing a strong focus on immediate action. While "solidarity" and "empathy" is less frequent suggesting that emotional connection with the public may not have been prioritised. His public replies predominantly reflect "urgency", possibly reacting to the government's tone. Interestingly, there is a lower frequency of "authority," indicating a lack of perceived control or leadership in public sentiment. In figure 3, Mazón's government responses show a slightly more balanced distribution of markers. While "urgency" is not prominent here, there is a noticeable presence of "solidarity" and "technical" markers, suggesting a more community-focused and solutions-oriented approach. Similar to Figure 1, "urgency" dominates public replies, suggesting widespread concerns about the immediacy of action during the crisis.

Both government responses heavily focus on "urgency," reflecting the critical nature of the crisis. Pedro Sánchez's communication appears more authoritative, while Carlos Mazón's approach integrates more solidarity and empathy. The public, in both cases, demonstrates a higher emphasis on "urgency" than any other discourse marker, potentially revealing a gap between public expectations and government priorities, especially concerning empathetic responses.

Moving on to the regional meteorological service from Valencia, the @AEMET_CValencia illustrated a distinct form of power grounded in technical expertise rather than political authority. Their communication showed and held significant weight due to relevant scientific insights, frequently because they employed technical language while adding visual maps and illustrations to show future heavy rains. Other institutional actors often referenced and deferred to AEMET. This established a unique form of epistemic authority within the crisis framework. Similarly, the institutional account for the Generalitat @GVA112 was characterised as a direct operational authority with command-and-control communications during critical moments. This was manifested through instructions and emergency protocols, showing that this type of institution focused more on immediate action rather than overarching political considerations.

These institutions, together with the Generalitat, illustrate how technical information is adapted and recontextualized across institutional levels. Providing the same information, through different messages and authors, creating a cross-institutional communication.

3.2.3. Sentiment analysis

During the early stages of the disaster (first 48 hours) we can observe high urgency markers present in 87% of messages, with words indicating immediacy ("now", "urgent"). Also, not only a dominant negative sentiment acknowledges the posts, including swear words and insults, but also there is a strong emphasis on action-oriented language, insisting that the community demands for basic needs that the government is not offering.

Later, during the peak crisis period (days 3-7) sentiment distribution became more balanced, as messages began incorporating a mix of acknowledgment and reassurance. There was a noticeable increase in the use of supportive language, such as expression of solidarity and encouragement between the affected communities that replied to authorities posts. Action verbs remained prevalent, emphasizing ongoing efforts by authorities and responders, however, real actions and changes were not happening, and the situation was not under control. We can see it reflected in these posts that reply to Carlos Mazón:

It's cold, there's no food, no water, no medicines and you say that tomorrow the UME is coming. More are needed. Remember this when you ask the Valencians for their vote again.

7:04 pm · Oct 31, 2024 · 540 Views

Dimitix. We have not notified the population or suspended any activities that would prevent the displacement of people waiting to be rescued. You are unworthy of leading the Generalitat.

[Translate post](#)

10:00 pm · Oct 29, 2024 · 2.947 Views

During the recovery phase (days 8 to 14), the tone shifted significantly in a negative direction. Messages began to focus on reconstruction and recovery, using terminology that highlighted rebuilding efforts ("restoration," "reopening") and progress. Nevertheless, there was

a marked increase in community-focused language, emphasized collective support and collaboration to overcome the aftermath of the disaster. This shift aimed to rebuild trust and foster resilience within the community. But the reality was that nothing was changing which affected the public reaction and the trust in the community was getting lost.

3.2.4. Public Response and Reaction

This full analysis revealed a complex evolution of trust between citizens and institutions. What began as a natural disaster quickly transformed into a test of institutional credibility, with public trust becoming a crucial factor in the effectiveness of emergency response efforts.

Initially, public responses demonstrated a baseline of institutional trust, with citizens actively seeking information and guidance through official channels. However, this initial trust proved to be fragile as the crisis unfolded. The discourse analysis shows a clear transition from information-seeking behavior to increasingly critical engagement with institutional responses, mainly with Pedro Sánchez and Carlos Mazón. This shift wasn't sudden but followed a discernible pattern, typically emerging 48-72 hours into the crisis – a critical window during which public perception began to significantly shift, as it was the key moment to help the population.

This erosion of trust manifested primarily through what can be termed "accountability discourse" – communications that moved beyond mere frustration to actively demand explanations for perceived failures in emergency response (Amaratunga et al., 2019). The temporal analysis reveals that this accountability-focused communication increased proportionally with perceived delays in emergency services deployment. Messages containing temporal references ("late," "delay," "wait") frequently appeared alongside institutional criticism, indicating that response timing was a crucial factor in public trust assessment.

The institutional communication strategy itself played a significant role in this trust dynamics. Official channels maintained a formal, protocol-driven approach throughout the crisis, focusing on technical updates and resource deployment information. However, this bureaucratic communication style often created a disconnect between institutional messaging and public

needs. When officials emphasized procedural aspects over practical assistance, it typically triggered waves of critical responses, suggesting that formal institutional language during crisis situations may actually accelerate trust deterioration.

Attempts at trust recovery during the crisis provide particularly interesting insights. Instances where institutions demonstrated transparency and directly addressed public concerns typically received more positive responses, suggesting potential pathways for trust restoration even during active crises. However, these recovery efforts were only effective when accompanied by visible action – mere communications of intent or future plans, without immediate tangible results, often failed to improve trust metrics and sometimes triggered additional criticism.

For instance:



Carlos Mazón @carlos_mazon_

...

We approved a first package of measures for those affected by the DANA:

- €6,000 for all families whose homes have been affected.
- €200,000 for each affected municipality. This is in addition to the €250 million aid package.
- All of this to ensure that it arrives as quickly as possible.

10:46 pm · Nov 4, 2024 · 164.6 thousand Views

Some replies to that post include:

Money does not hide the dead

9:05 am · Nov 5, 2024 · 181 Views

Look, do you really think that you can start a family or a business with 6,000 euros, after the immoral negligence you have committed? I find it incredible the miserable inhumanity of some shitty politicians who hide under their umbrella.

12:52 am · Nov 5, 2024 · 119 Views

With 200,000€ you can have a coffee and a butter sandwich for breakfast in the whole town. Get out of here now.

8:45 am · Nov 5, 2024 · 255 Views

The implications of these findings extend beyond the immediate crisis response. They suggest that maintaining public trust requires a more sophisticated approach to crisis communication, one that balances operational efficiency with emotional intelligence and historical awareness. The analysis indicates that effective crisis management must address not only the immediate emergency but also the broader context of institutional credibility.

4. DISCUSSION

This study examined the interplay between institutional response and community networks during the Valencia disaster in October 2024, focusing on how their interaction influenced emergency management effectiveness. The findings reveal complex dynamics between official institutions and community response, highlighting systemic failures and emergent resilience mechanisms.

Governance Structures in Disaster Response

The analysis discloses significant challenges in disaster response governance, particularly in the context of Spain's multi-level political system. Public organizations tend to prepare for known and expected contingencies, but as this paper has shown, the administrative toolbox for routine disturbances has only limited use in the face of the DANA crisis. Scholars generally agree that disaster response cannot be effectively managed through strict hierarchies (Nowell et al., 2018; Hardy & Comfort, 2015).

The centralization of authority and added layers of coordination in crisis do not improve the operational response capacity (Moynihan, 2008; Waugh & Streib, 2006). Instead, the discourse analysis and the interview showed how bureaucratic structures often hindered rapid response. This supports Boin & Hart (2010, p.359) argument that effective crisis management depends on principles and processes that assure flexibility and a smooth flow of information, with formal structures playing only a facilitative role. On the other side, lateral, emergent coordination is essential for effective disaster response, as excessive centralization can hinder adaptability, responsiveness and decision making (Nowell et al., 2018, p.700). An important point of this research was the political fragmentation between the different levels of government (PP and PSOE). This created what Cohen (2001) adapted from Sykes and Matza's (1957) 'techniques of neutralization'. Manifesting in a way of institutional and interpretive denial. While authorities acknowledged the meteorological data, they reinterpreted its significance, downplaying the severity of it.

Trust dynamics and communication failures

This paper also showed the complex evolution of public trust throughout the crisis. Initial institutional communications demonstrated a predominantly top-down approach, with official channels serving as primary information disseminators. However, this approach proved increasingly ineffective as the crisis unfolded. The communication strategy itself played a significant role in trust deterioration. Official channels shared formal and protocol-driven posts, focusing on technical updates and resource deployment information. However, this bureaucratic communication style often created a disconnect between the institution and public needs. When these actors emphasized procedural aspects over practical assistance, this triggered waves of critical responses. Some scholars argue that trusted communication must be planned, not only to allow the organization and individuals within it to adapt more quickly by increasing the potential for change (Berkes and Folke, 2002), but also because trust deteriorates during crises when institutions fail to meet public expectations (Longstaff and Yang, 2008).

Implications for Policy and Practice

The findings of this research hold significant implications for disaster governance:

1. Restoring and maintaining public trust: Institutional delays, lack of timely communication, and perceived blame-shifting contributed to public skepticism. Addressing this trust deficit requires transparent communication, immediate resource deployment and visible action during emergencies.
2. Nonpartisan crisis management: establishing independent, bipartisan crisis management bodies can help ensure that disaster responses prioritise public welfare over political gain. This could be beneficial as standardized response protocols, operating independently of political leadership, can better offer public safety.
3. Resource infrastructure management: implementing regular maintenance schedules for flood prevention infrastructure, as well as establishing clear protocols for rapid equipment deployment. This can be done by creating databases of available emergency resources, and automated systems for resource tracking and deployment, for a better organization of volunteers, official bodies and victims.

5. METHODOLOGICAL REFLECTION

This section offers a critical reflection on the research methodology employed in this study, analysed both the strengths and limitations of the approach while identifying areas for improvement in future research, also it pays attention to ethical considerations and the researcher's positionality throughout the research process.

The semi-structured interview method, rooted in sociological theory and inspired by the Chicago School tradition, was central to this study. This qualitative approach made use of participant observation and life histories, a tradition that has since become firmly embedded in criminological studies. While positivist approaches have faced criticism from advocates of symbolic interactionism, the field of criminology has expanded its focus from merely identifying crime's causes to exploring how crimes are socially defined and the responses they provoke.

As Coleman and Moynihan (1996) highlight, official data and surveys are often inadequate for examining sensitive topics like government shortcomings. In such cases, qualitative methods like interviews provide a richer, more nuanced understanding. This approach resonates with Sutherland's (1949) concept of white-collar crime, which emphasizes offenses committed by individuals in positions of trust—a theme relevant to this study's exploration of institutional responses. Here the semi-structured interview offered flexibility, enabling the participant to narrate his experience organically while addressing key research themes such as disaster response, institutional communication, and community involvement (Wincup, 2017). Follow-up questions and changes to the interview flow fostered a sense of active listening, enhancing the depth of the data collected.

Despite its strengths, relying on a single interview limits the generalisability of the findings. Although, the purposive sampling ensured relevance, the insights gained from one individual's experience may not fully capture the diversity of perspectives within the flood-affected community. For example, differing socioeconomic status, level of education or access to resources could influence how individuals perceive institutional respondings, being insufficient to capture the broader picture.

The notion of accuracy further complicates this issue, particularly because the study focuses on a subjective individual and understanding, rather than verifiable factors. Consequently, a relevant question appears whether the interviewee is telling the “truth”? (Wincup, 2017, p. 100). The question about whether or not is telling the truth is closely linked to concerns about the validity of data. Especially, when narratives like a disaster are interpreted as a definitive record of an event, rather than as individual perspectives shaped by memories, emotions or social context, for instance. This debate highlights a critical tension between positivist and constructivist paradigms in qualitative research. Positivist traditions often equate validity with the accuracy and objectivity of data, seeking to measure narratives against an external standard of truth. Constructivists, however, challenge this notion, arguing that truth is a socially constructed and context-dependent concept. Sandberg (2010, p.452) emphasizes that accountability demands rigorous empirical documentation of the analytical process, allowing other researchers to engage with the data and draw their own conclusion.

In this sense, I consider the important shift from proving the “truth” of a narrative, or my results, to ensuring that the research is transparent, reflexive, and open to reinterpretation. These characteristics are often seen as providing the basis for other researchers to replicate an initial study, and replication is regarded by many positivists as essential in order to test whether the knowledge produced is sound as of, it has not been affected by my subjectivity (Hammersley, 2013).

Building on the results from the interview, my critical discourse analysis provided a complementary lens to deepen the understanding of institutional and public responses during the disaster. CDA proved effective in unpacking power dynamics, sentiment shifts, and the broader societal implications of institutional communication. Matheson (2008, p. 6) highlights that CDA enables researchers to identify how language perpetuates prejudice and narrow interests, a focus that was particularly relevant in this study. By analysing both official and public discourse, following Palen and Hughes's (2018) framework, themes such as public trust, power dynamics, and resource mobilization highlighted the sociopolitical dynamics at play, offering a deeper understanding of the institutional-public relationship.

Nevertheless, CDA presented challenges, particularly regarding the subjective nature of discourse interpretation. Reflexivity was crucial to mitigate the risk of overemphasizing certain themes due to personal bias. Berger (2013, p. 2) emphasizes that a researcher's positionality significantly influences data collection and interpretation, particularly in emotionally charged contexts like disaster. My emotional investment in the community's well-being may have unconsciously shaped my analysis, potentially amplifying critiques of institutional responses. Fairclough (2010) cautions that CDA's confidence in interpretation can sometimes obscure the need for transparency in analytical processes. Similarly, Larcher (2015) critiques CDA for oversimplifying socio political contexts by framing them as binary struggles between dominance and resistance. In this study, institutional discourse was often portrayed as authoritative, while public responses were categorized as critical or urgent. This framing may have overlooked more nuanced interactions and individual strategies.

Moreover, analysed online interaction and offline action dynamics proved challenging. Urbanik and Roks (2020, p. 214) argue that ignoring the interdependence of these environments can skew conclusions, as social media often shapes real-world outcomes. While social media responses illuminated public frustration and urgency, further research could explore how these sentiments translated into offline actions and interactions. By combining a semi-structured interview with CDA, this study sought to bridge the micro-level experiences of individuals with macro-level institutional dynamics. However, this methodological interplay revealed limitations, such as the inherent tension between subjective narratives and the broader sociopolitical structures influencing them. This perspective underscores the importance of reflexivity in qualitative research, particularly when working with sensitive and subjective data. Exploring our problem as researchers is to make sure that, whatever point of view we take, our research meets the standards of good scientific work, even if we don't manage to answer our research question as intended at the beginning (Becker, 1967, p. 246).

As an early-stage researcher, I find Becker's (1967, pp. 246–247) argument about positionality particularly compelling. It is undeniable that my sympathies and perspectives inevitably influence the way I collect, interpret, and present data. The selection of participants, the framing of questions, and the prioritization of themes in my analysis were all shaped by my

own assumptions, values, and theoretical commitments. While I acknowledge the potential for bias in this paper, I also recognize the inevitability of engaging with the conventional hierarchy of credibility. My personal and political commitments have guided this work, and I have employed theoretical and methodological tools to minimize distortions and ensure rigor.

6. CONCLUSION

The October 2024 Valencia DANA floods revealed a striking paradox in disaster response dynamics: as institutional systems failed, the community demonstrated remarkable resilience and effectiveness. This research documented how the initial 72-hour period following the disaster became a crucial window that shaped both immediate crisis management and longer-term community-institution relationships. Moreover, the analysis of social media communications and interview data revealed a clear evolution in public response - from initial reliance on official channels to rapid self-organization when institutional support proved to be ineffective.

The research questions proposed have been thoroughly examined, revealing how political fragmentation between PP and PSOE directly undermines coordinated disaster response, while bureaucratic communication patterns accelerated the erosion of public trust. The transformation in disaster response dynamics has significant implications for understanding institutional trust and community resilience. Perhaps most importantly, the deterioration of public confidence in official channels was not merely a reflection to immediate failures but reflected deeper systemic issues in disaster preparedness and communication.

Further, from a broader abstract perspective, the DANA floods could serve as a manifestation of broader societal and environmental challenges in the age of climate change. The dual reliance on institutions and community networks highlights the need for an hybrid governance model that could integrate formal structures with localized resilience strategies against natural disasters. This paper argues for a paradigm shift in disaster governance –one that prioritizes nonpartisan collaboration, leverages digital platforms for real-time communication and actions, and invests in suitable infrastructure to mitigate future risks.

Methodologically, the research integration allowed for a comprehensive exploration of both micro-level experiences and macro-level institutional narratives. However, this approach emphasizes inherent challenges. The subjective nature of the interview data and potential biases in discourse interpretation required a rigorous reflexive framework to ensure validity and

minimize distortion. This research underscores the importance of triangulation for strengthening research reliability, aligning with contemporary discourse on qualitative rigor.

Looking forward, this paper suggests the need for fundamental changes in disaster governance. The evidence points to the necessity of developing hybrid response models that better integrate formal institutional resources with community networks. Future research could benefit from expanding the dataset, incorporating wider perspectives and conducting more interviews. Also, as climate change increases the frequency of extreme weather events, developing a robust framework for studying disaster responses becomes increasingly crucial.

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8. APPENDICES

8.1. Appendix 1: Anonymized Interview Transcript

Part 1: General Experience During the Disaster

1. Could you describe what happened during the floods from your perspective?

"I spent most of that day at university because we had morning classes. Although there was an alert, we simply knew it would be a rainy day. They just gave the usual weather alert that they always give here - just a warning symbol appears next to the weather on your phone, and the morning was rainy. But nothing extraordinary happened, so after class I went to the library on campus. The campus is in an area that wasn't especially affected - all of northeast Valencia, where the UPV campus and my house in Benimaclet are located. It didn't have too many problems, but as the afternoon went on, especially after lunch, things got worse than we thought because on campus the drains started overflowing, and water was flowing through the street almost like a river.

It wasn't possible to return home anymore, which for me was a 40-minute walk, without getting very wet because the water was already ankle-deep in that area by mid-afternoon. So what almost all of us in the library decided was to stay there sheltered, hoping the rain would stop and give us a break to get home. But the opposite happened - it started raining more and more. Water began entering the library under the doors. I think there's a glass wall where the glass gave way and a lot of water came in through there, and possibly even through the roof coverings and also on the upper floors of the library.

The UPV, the university, is a very long street, let's say, and the buildings are alongside it, and water was flowing down the middle, a lot of it, and in some areas it was already pooling because there weren't enough drains to clear all the flow. As more water kept circulating, it started dragging plants and vegetation, and it went from being standing rainwater to mud and water with soil that looks brown because it drags earth from wherever it comes from and from the overflowing sewers, so everything gets mixed together.

We practically had to wait until after midnight to be able to return home. And I tell you, even though this area of Valencia wasn't especially affected, you could see everything - some cars even displaced from their spots, lots of garbage, containers, and in some entryways there was a pile of vegetation and trash and umbrellas and even people's belongings, and they were inaccessible. You couldn't enter or leave some houses because their entryways had accumulated all of this stuff, and the return journey from the university was a real adventure."

2. When did you first realise that the flooding would be severe?

"It was when we saw that despite how much it had been raining before, after 20 minutes it was raining twice as much - we saw that the situation didn't correspond to the rain level we had been given in the weather warning. I saw more and more and more, and when there was already a hand's width of water coming in under the doors and through the ceiling, we saw that this could get out of control, as it finally did end up doing."

3. How did the floods impact you and your household?

"Well, I live on a third floor, so beyond our balcony being left a complete mess, nothing too serious in our home. However, to enter the house, you go through an interior courtyard, and that courtyard was left super dirty and full of cans and garbage and soil that had come in through the main door. This reached up about two or three steps of the stairs that go up to my house - a total disaster. The corners especially, and near the doors, water accumulates a lot and it's a disaster to clean up later. And well, the street in front was even worse, of course."

4. Were there any immediate safety concerns or damage to your property?

"Yes, normally one always leaves a window slightly open because even though it's November, here the weather is quite mild, so you don't always check if a window is open or if the door is completely closed inside with the mat. So I assumed that being on a third floor, water

wouldn't enter the house and destroy everything, but through a window, especially if there's wind and with more force, water might start entering the living room and affect some electronic device, especially when water was already entering the library. So I was a bit worried, but in the end, fortunately, at home there was very little damage - only on the terrace and well, in the entrance courtyard, but fortunately being upstairs we didn't have any losses."

5. Follow-up: What were the most challenging aspects of this experience for you?

"Well, on one hand, being all locked up in the library and not knowing if this would last 2, 3, 4 more hours, and in the library what you see is - well, I already told you I didn't have too much problem because I was on a third floor and wasn't too worried, but there were people who either live near the river or whose house is on a ground floor, and the children in the library were all super worried, logically. Either about their things in the best cases or about their families - some even knew their parents worked as truck drivers so they were on the road a lot and were worried if they had any problems. There are also people in Valencia - there's a very important port, so the port people were also afraid that water might have reached there or caused major flooding, or those who are at sea might have had problems, but above all, I tell you, the people who work on the road and near the people who lived in the south, which was finally where it affected them most - what bothered me most was seeing them suffering, worried, calling their families, trying to get in contact with them, there were people crying. And then of course also on the way back home, seeing all the destruction it had caused there, and I don't want to imagine what the lower part of Valencia was like, because we were in the theoretically less affected area the whole time, but just the journey back home was like seeing something that looked like a hurricane had passed through - everything was full of mud, full of earth, flooded when it wasn't directly muddy, and garbage, everything on the ground super dirty, what a chaos, a chaos, and then people checking flooded houses, people leaving their houses with valuables held high so as not to lose them. It's madness, madness."

6. Follow-up: Were there specific moments when you felt particularly vulnerable?

"Well, honestly, at no point did I see myself having personal damages beyond, in the worst case, getting very wet and having to walk home with water almost up to my knees. But yes, a bit when the window broke and you could hear it and water was coming in and there was glass - that certainly gave bad vibes. But well, I mean, the feeling of being in the library without being able to leave, without being able to go home, with many people and a situation of uncertainty did feel vulnerable, but as far as my health and physical well-being, fortunately it didn't get that bad there."

Part 2: Government and Emergency Response

7. What kinds of assistance or support (if any) did you receive during and immediately after the floods?

"During the flood, absolutely nothing - the only thing was the university that let us stay in the library, and they more or less had buckets and had supplies because it's not the first time there have been heavy rains there. But I hadn't been studying here long and had never seen it like this before, and during the moment, no help at all - in fact, we didn't even have information about whether it would get worse or better, when it would stop, when we would be able to return home, what the communications were like for returning, what traffic there was, which streets were open, which streets were closed - no information at all. The worst things were the uncertainty, and right after, let's say when I could return home the next morning, nothing either - the only thing you saw on the street where neighbours, already starting to either pump out water or remove unusable things from houses, and you had practically no emergency services or police, and they didn't even have many places to pass through because the streets had bars in the middle when there weren't cars and scooters - there were piles of these electric ones, accumulated in the middle of the streets, like mountains of metal. Nobody could pass through there because you practically couldn't go up and down anymore in the south - I mean, instead of mountains of scooters, mountains of cars and trucks."

8. Who provided this assistance (e.g., local government, emergency services, community organisations)? And when?

"Well, there was very little assistance - the first thing we saw was on the second day when civil protection and volunteer vehicles passed through once we had cleared the roads. I tell you there was a lot of mud and filth but some scooters, but no heavy machinery through the north - they could pass through earlier, but since there wasn't really as much need because it didn't affect it as much, it didn't make sense. More than passing through there were volunteers and civil protection and some emergency service vehicles but mostly civilians for senior centres or children - there really wasn't anything, but that was positive because we didn't need it. I know that in the south, the first to arrive were volunteers with all-terrain vehicles and excavators to make paths in the streets so machinery could enter where needed to remove cars, and then approximately the police and army - the army continues especially where there are streets with literally several floors of cars accumulated on top of each other, they're removing them with construction equipment. But really, there wasn't much presence of emergency services, police, or anything - maybe people were there for two days, I mean the day it rained and the day after, then police and military people started arriving in that order and in dribs and drabs."

9. Follow-up: Was the assistance provided appropriate for your needs/the neighbourhood needs?

"Well, our neighbourhood didn't need too much - what came were volunteers to clean or check the roads in case there were elderly people with needs or children, or to bring supplies and provisions. Probably in our case, since we weren't affected so much by the rains themselves but later by the lack of infrastructure and supplies, it was better if there were people who needed milk or diapers for children - well, there were supplies of these things in volunteer cars especially, so good - fortunately we didn't need much and what reached us through volunteers was what we needed."

10. Were there any specific forms of assistance you needed but didn't receive?

"Of course, I think in general the most critical thing was the delay in acting because the government has heavy machinery - they have excavators, they have bulldozers to clear the streets, but what they should have done was act immediately as soon as it practically stopped raining because there were many people who were trapped by the rain, both in lower floors with water up to their waist or neck, or inside their cars swept away by the current and inside one of these mountains of cars several stories high. What was needed would have been an immediate emergency service to try to rescue these people - God knows when they died simply because these resources weren't mobilised much, much earlier. Fortunately, I didn't lack anything - we had food at home for 34 days and then we were finally able to get some from a distribution centre that remained open, but the key is what they should have done - they should have acted quickly to get people out who had been caught by surprise by the water in underground parking lots, in commercial ground floors, in their houses' ground floors, in cars near the ravines in the villages where there were landslides. To this day, I still don't know if emergency services really went to get people out, but it's the villages more than Valencia proper where everything has been hardest because of the mud and the overflow from the ravines, because here yes, here all the water finally arrived and overflowed everywhere but it was water and mud, not too dense, but what was carried in the villages was very dense water and mud, freshly overflowed from the ravines, which can easily sweep away a house and everything."

11. How long did it take to receive different types of assistance?

"Well, we had food one day later, medications and supplies like diapers and medicines came two days after everything happened, and then police and state machinery was on the third day, and mind you, we didn't need it urgently, but well, it took a while to see state officials around there."

12. How would you describe the response of local authorities during the initial stages of the flooding?

"Non-existent - for us it was all a normal day, because the warnings they gave were normal day warnings, average rain warnings like I had already seen dozens of them, and when we saw that things were getting more serious than they seemed, they really weren't telling you how long it would last or when it would end or which streets were closed - they simply said 'oh well, looks like it's raining quite a bit, yes.'"

13. Follow-up: Were they prepared and organised, or were there issues with response timing?

"No, not prepared or organised at all. They were just reporting what was known at the moment but without any kind of forecast, which is the problem - the uncertainty of seeing if it would get worse or better, and if you're really safe where you are now or if you need to go up to a roof. You have no idea, things just keep getting worse and worse and worse, and from nowhere you get any kind of forecast, so you worry. That was the problem - there was no kind of organisation or concern about the events, not even while they were happening."

14. Did you notice any coordination between different levels of government (local Catarroja, Paiporta, Chiva y Massanassa, comunitat Valenciana, national)?

"The central government was practically only heard from the next day, after the morning of the day when we were already home and looking to start cleaning and rebuilding. And the community government was just saying what was happening as it happened - like 'it seems to be raining a lot and I don't know, it has overflowed, stay in your house' - but there was nothing to coordinate because they weren't doing anything. And the city councils - well, I don't know what means they have to communicate, I honestly don't even follow the city council on social media or find out anything about what the City Council says, so I just went home when things got a bit better and that's it."

15. Were you informed about evacuation or safety measures before or during the floods?

"Nothing, I think nobody there has any idea, neither locals nor outsiders, even less so. I know the university has its protocols - for example, the university library, sorry, was prepared for flood issues because they had buckets and rags and mops and tapes, but they had no idea where we should have gone if things had gotten even more catastrophic, or which places would be safe, or what high places there were nearby to climb to, or anything."

16. Follow-up: Was the information clear and easy to understand?

"The information from the library workers was that everything was equally flooded there, if not worse, therefore we had to stay there and they wouldn't let us leave, and if they did let us leave, it was at our own property and responsibility and they didn't advise it. So there wasn't information to communicate, therefore well, that information, good grief, no."

17. Through what channels did you receive emergency information (TV, radio, social media, SMS alerts)?

"Well, there, basically all of us students in the library were getting information through social media, through Twitter, some had TV on their computers, and the TVs in the study room downstairs were showing what was happening, but well, it was simply more what people were recording - people with their phones from their houses showing the water carrying hundreds of cars away, but it didn't really give you information about what interested you, which was what the path home was like, if the city's infrastructure was okay, or if it would get better or worse, and what the safety protocol was - about that, nothing. They just dedicated themselves to reproducing what people uploaded to social media."

18. Follow-up: How frequently was the information provided updated?

"Well, they took a long time to give a warning - it was already afternoon when they started giving warnings after the volume the reservoirs were releasing, and social media started

circulating super crazy videos of cars tangled up in the mud. At first, they were just videos looking at when it was raining, and then within half an hour, they were apocalyptic videos of cars being dragged along streets blocked by piles of cars and trucks that the water had swept away. And when it was late afternoon/evening when it was clear things were getting super serious, the community government started to broadcast, well, like every 15 minutes status updates about what was happening somewhere."

19. Did you experience any challenges in accessing help or communicating with emergency responders?

"Well, the truth is I didn't have to call emergency services because the information that was available was what was coming back there between everyone through social media screens, YouTube, television. So fortunately, we needed emergency services but they wouldn't have been able to give us much information because I don't think they were very well informed either."

20. Were there sufficient resources and personnel available to assist you?

"Since it didn't affect me too much beyond the shock and uncertainty of being locked in there with so many people, while we watched images from other places that looked like the world had ended, well, I didn't need help except for - on the third day after, collecting and consuming the food we had at home, we saw which distribution centre giving out food was closest because not all supermarkets were open, they were opening at very strange hours and many already had food affected by mud and rain. So we went to a place where they were giving out clean food, we got a bit there - truth is there were quite a lot of people but well, in half an hour they attended to us well and and well yes, I mean fortunately you didn't need much help so I can't complain about the help that was available, but well that in order - I imagine in the south it would have been much worse, I truly can't - I have no idea."

21. How would you evaluate the government's response overall?

"I mean all the responses from the administrations - I don't care what level of administration whether state or regional, well the local one can't do much either, it's not in their hands - but the two administrations, the community and the central government, which are of opposing political colours, both were lamentable. First, those of the Valencian Community were horrible because they abandoned people to their fate, didn't give any information, failed to really warn about the danger the rains posed, and it wasn't until it was clear that this was becoming catastrophic that they were seen saying something about being careful. And the following days, don't think they deployed resources or tried to do anything that I've seen to start the cleanup work - instead, it was terrible that the president of the community dedicated himself to passing around a link on social media for people from Spain to donate here, which truthfully I'm not clear about - so the community part is lamentable. And then the government part was also horrible because once the rains had passed, even if it wasn't their responsibility to look after people, they wouldn't have been seen at all. Everyone was waiting for them to bring relief to the streets and to get people out who were trapped in workshops, lower garages, and in cars, and nobody was moving there except people on foot trying to clean their houses to be able to enter and exit and, as far as possible, clear the streets because what can eight or ten people do when you have a car blocking the street? The government wasn't doing anything because they didn't want to take the blame for fixing the community government's mess, so they neither let others do anything nor did anything themselves - I mean terrible, literally for political reasons. I was blocked for practically two days and I'm sure there are people who died because of that delay."

22. Has your experience changed your trust in local authorities?

"Undoubtedly, it's clearer than ever to me that when things get difficult, when lives and people's health are at stake, the only thing you can trust in is people - not collectives, not institutions, not administrations - individual people with names and surnames. These are the people who really show up when systems fail, because they don't make sufficient provisions for what's really going to happen with the rain."

23. What do you think was handled well? What could have been improved?

"What was done well wasn't by the governments - I mean the governments didn't do anything well. What was done well was what civilians could do comfortably, that is, laborious work with non-luminous goods, like medicines, which even by the next day, they were going to residences to visit elderly people to check if they were okay or bring basic supplies like water or baby bottles. But of course, individual civilian citizens can't clear a street with 20 piled-up cars."

Part 3: Ongoing Impact and Recovery

24. How have the floods continued to impact your daily life?

"Well, to this day classes haven't resumed at the university yet, because there are people from outside Valencia from the most affected villages who have to be helping at home to bail out mud, literally with shovels and water, or else they're left practically without things, they also stay at home if affected by humidity or pressure. So we're not really sure what to do about classes. You go to the street and it looks empty, you see people with little spirit, and if that touch in our area, well, more than places where a lot of filth accumulated, yes it's dirty but the streets are passable and have been cleaned quite a bit because where we were with a Tshawe hose, well it was already quite presentable, but well there are many places where the accumulations of waste are still there and that's a breeding ground for bacteria. And the south, well we used to like going to southern Valencia because it was near Albufera and such, right now we're reconsidering because first of all I think they don't even let you pass - emergency services say that because they say you get in their way and volunteers aren't working either, so well that's an area there's no plan to go there anymore because you don't want to see people suffering or bother them, so well you don't really know what to do, you don't know how to help."

25. Follow-up: Are there lingering effects on your home, work, or routines?

"Well clearly, before it was going to university and studying and then studying in the afternoons, and now for several days, almost five days, a week, you would wake up and see where you needed to continue cleaning from where you'd left off the day before, whether in the house courtyard or in the street. The neighbours clean their buildings and clean their street, and little by little things get solved. When they finish their streets, you look around to see where you can contribute something, whether collecting garbage or giving a hose-down or picking up trash or trying to get a crane to come remove a car from there."

26. What resources or support are still needed in your community to help recover from the floods? Are there any unmet needs you think should be prioritised?

"Right now, especially in southern Valencia, what needs to be done is to start cleaning and disinfecting because literally that place is a quagmire - God knows what's in that mud that has travelled dozens of kilometres through forest and sewers, and that's a very serious biological risk, very serious, and it's not being addressed. They're starting to remove cars from parking lots and mountains, and well, that's another thing - there are still mountains of cars cutting off infrastructure, which seems extremely serious to me, especially thinking that who knows, maybe there were still people alive in those cars and because of taking so long to respond, they couldn't be rescued. But then the fact that everything is muddy - the houses, businesses, markets, vehicle interiors - that seems like an extremely serious health risk to me, so it still makes me shudder."

27. Do you feel that enough has been done to prevent future floods or mitigate their effects?

"What happens is that here there have always been many rains and irrigated floods, but precisely because of that, many infrastructures had been built to prevent or mitigate it - ravines, dams, they cleaned the ravines from what I know. These are things that they've stopped maintaining, but since there hadn't been problems with this for a while, they stopped investing public resources in keeping the ravines clean and maintaining the dams, maintained or building new dam projects that were planned. And since there hadn't been problems with this for a while, well it was left alone and left alone and left alone until it really became necessary, and the ravines were already full of vegetation and overflowed, and all that came to Valencia and there weren't dams to contain all the water, and some of the ones that existed even broke - I mean they've received significant structural damage, maybe they'll have to be demolished. So I don't think - I don't think many years ago when this was still a reality, quite a lot was done, but since it wasn't in day-to-day life anymore, maintenance was stopped until this came and the infrastructure wasn't prepared."

28. Follow-up: What actions or improvements would you like to see in terms of flood prevention or emergency planning?

"The thing about floods in reality is something that has been studied since Roman times, I mean, there's no need to investigate - we need to build infrastructure, build dams, build reservoirs, clean the ravines, and infrastructure that was done when they changed the course of the Turia here. I don't think we need prevention or concentration things - nothing - simply we need to start pouring concrete, we need to pour concrete and make channelling and containment infrastructure. Basically, it's not mysterious, it's something that has always been known, but here since money was used for what it was used for and since this was a problem, well they've stopped building infrastructure and stopped maintaining what was there, which is even more criminal."

Part 4: Reflections and Future Preparedness

29. Follow-up: How did the flooding event change your perception of safety and preparedness in your area?

"Well, I think on one hand the university did well - you can tell the university has been there for years and has gone through similar things. So the library people knew what to do and had material prepared so the library wouldn't also become a mess, and I think the university hasn't suffered too much damage except for the street that goes through the middle, where all the water goes. So that's good, but I don't think we need Safety prep - I don't know, but I truly see that we simply need to start pouring concrete upstream in the mountain, where it comes down to the Turia. Nothing more - people don't need to live with the sword of Damocles if there's a flood, I don't see that as necessary - what's needed is infrastructure."

30. Follow-up: What would you suggest to local authorities or the government to improve their response to such disasters in the future?

"Time is key - it's something that every time you see a natural disaster on TV, everyone says you have to respond quickly for people who are trapped in problems, try to rescue as many as possible, and here they did exactly the opposite. Here they were passing the hot potato from one to another and people were literally dying in the streets. What needs to be done is respond quickly - they have the infrastructure, they have the machines, the bulldozers, the construction equipment - there's no need to buy anything, no need to spend money there, simply need to have a bit of political decency as a manager and be where you need to be, which is serving the public."

31. Follow-up: Do you feel prepared in case of another extreme weather event?

"Not at all, not at all, because what needs to be done with infrastructure unfortunately isn't done overnight - it's done over years if not decades. So if in two weeks, God forbid, we get the same rain as now, everything will come down again - we're not prepared, and maybe the government will respond slowly again or maybe this time they learned and will do it quickly, but the reality is that there's nothing separating a lot of rainfall from this overflowing and being able to generate many years of damage here in the city - there's nothing to stop it. We're like caveman times."

Follow-up: What resources or information would help you feel more prepared?

"And that's another thing - all the infrastructure that's built doesn't need too much money to be able to measure real-time data about how the reservoirs are doing or what water flow the dams are releasing or what's circulating through the ravines. It's not necessary to be able to measure these magnitudes in what's already built, and yet, the government has access to them and when they needed to publish it to us, they did it a bit when they felt like it and poorly. And now we see a few days later that people are trying to see the data from public pages to compile information about when it rained, and what they're doing is erasing the data so their ineptitude and poor management isn't seen. I mean, the little infrastructure there is to have information about safety, they're trying to manipulate and hide it for political reasons to stay in power and so

the full weight of the law doesn't fall on them for their responsibility in what happened. What needs to be done is build modern infrastructure that gives real-time information to people and in case it overflows, automatically alerts people by phone that X location is releasing water or is above its nominal capacity, warning that floods or overflow in XZ localities."

32. Is there anything else you'd like to share about your experience or the government's response?

"Today, building cheap infrastructure is possible - cement is cheap, technologies are well established. In China, they convert trillions of cubic metres of concrete per year, and well, here what we really need to do is 5% of what China does in a year and we would be covered for these things for generations. But there's no political will because politicians are focused on what will give them more votes in four years and aren't thinking about the beams that last 20 years, and it's shameful because it's a tiny money investment that would give security to everyone. Moreover, with these infrastructures, you can perfectly measure the state of the riverbed in different places, the state of rainfall, or if any place overflows, and it's very easy to automatically alert people. And for not having a bit of political division and that money, spending it on things that give more electoral challenges in four years instead of doing things that will save lives for 20 years and will give security to people for 20 years - people have died this time, I hope they learn."

8.2. Appendix 2: Data Analysis

```
# Import necessary libraries
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
from collections import Counter
import re
from textblob import TextBlob
from wordcloud import WordCloud
import warnings
import nltk
from nltk.corpus import stopwords
from nltk.tokenize import word_tokenize
import spacy
from spacy.lang.es.stop_words import STOP_WORDS
warnings.filterwarnings('ignore')

# Download required NLTK data
nltk.download('vader_lexicon')
nltk.download('punkt')
nltk.download('stopwords')

# Load Spanish language model for spaCy
nlp = spacy.load('es_core_news_sm')
def load_and_preprocess_data(file_path):
    """Load and preprocess the structured Twitter data"""
    # Read CSV with proper date parsing
    df = pd.read_csv(file_path, parse_dates=['date'])

    # Add processed text column for analysis
    df['processed_text'] = df['content'].apply(preprocess_text)

    # Add sentiment scores
    df['sentiment'] = df['processed_text'].apply(lambda x:
        TextBlob(x).sentiment.polarity)

    # Add flags for different user types
    df['is_government'] = df['handle'].isin(['@sanchezcastejon',
        '@carlos_mazon_', '@AEMET_CValencia', '@generalitat',
        '@GVA112'])
```

```

print(df)
return df

def preprocess_text(text):
    """Clean and preprocess tweet text"""
    if isinstance(text, str):
        # Convert to lowercase
        text = text.lower()

# Plot 1: Tweet volume by user type
daily_tweets = df.groupby([df['date'].dt.date,
                           'is_government']).size().unstack()
    daily_tweets.plot(ax=ax1, marker='o')
    ax1.set_title('Daily Tweet Volume by User Type')
    ax1.set_xlabel('Date')
    ax1.set_ylabel('Number of Tweets')
    ax1.legend(['Public', 'Government'])

# Plot 2: Tweet types
daily_types = df.groupby([df['date'].dt.date,
                           'type']).size().unstack()
    daily_types.plot(ax=ax2, kind='area', stacked=True)
    ax2.set_title('Daily Tweet Types')
    ax2.set_xlabel('Date')
    ax2.set_ylabel('Number of Tweets')

plt.tight_layout()
return fig
def analyze_engagement_patterns(df):
    """Analyze engagement patterns by type"""

# Create engagement analysis plot
plt.figure(figsize=(10, 6))
engagement_by_type = df.groupby('engagement_type').size()
engagement_by_type.plot(kind='bar')
plt.title('Engagement Types Distribution')
plt.xlabel('Engagement Type')
plt.ylabel('Count')
plt.xticks(rotation=45)
plt.tight_layout()

return plt
def analyze_themes(df):

```

```

"""Analyze major themes in tweets"""
themes = {
    'Emergency Response': ['emergencia', 'ayuda', 'rescate',
    'bomberos', '112'],
    'Government Action': ['gobierno', 'ayuntamiento',
    'alcalde', 'autoridades'],
    'Community Support': ['vecinos', 'comunidad', 'ayudar',
    'solidaridad'],
    'Infrastructure': ['calles', 'carreteras', 'puentes',
    'daños'],
    'Safety Concerns': ['peligro', 'riesgo', 'seguridad',
    'advertencia'],
    'DANA Impact': ['dana', 'temporal', 'lluvia',
    'inundaciones']}
}

# Create visualization
plt.figure(figsize=(12, 6))
theme_sums = theme_df.sum()
theme_sums.plot(kind='bar')
plt.title('Frequency of Themes in Tweets')
plt.xlabel('Theme')
plt.ylabel('Number of Tweets')
plt.xticks(rotation=45)
plt.tight_layout()

return theme_df, plt
def plot_sentiment_analysis(df):
    """Create sentiment analysis visualizations"""
    fig, (ax1, ax2) = plt.subplots(2, 1, figsize=(12, 10))

    plot_tweet_timeline(df)
    plt.show()

# Engagement analysis
analyze_engagement_patterns(df)
plt.show()

# Theme analysis
theme_df, theme_plot = analyze_themes(df)
plt.show()

# Sentiment analysis
plot_sentiment_analysis(df)

```

```

plt.show()

# Word cloud
text = ' '.join(df['processed_text'].dropna())
wordcloud = WordCloud(width=800, height=400,
background_color='white').generate(text)
plt.figure(figsize=(10, 5))
plt.imshow(wordcloud, interpolation='bilinear')
plt.axis('off')
plt.title('Word Cloud of Tweets')
plt.show()

class EnhancedDiscourseAnalyzer:
    def __init__(self, df):
        self.df = df.copy()
        self.df['is_government'] = self.df['handle'] ==
        '@sanchezcastejon'
        self.sia = SentimentIntensityAnalyzer()

        # Comprehensive themes for crisis communication
        self.themes = {
            'emergency_response': [
                'emergency', 'rescue', 'response', 'services',
                'help', 'assistance',
                'deployment', 'evacuation', 'intervention', 'urgent',
                'immediate',
                'crisis', 'mobilization', 'relief', 'rapid',
                'emergency_services',
                'first_responders', 'ambulance', 'firefighters',
                'paramedics', 'dispatched',
                'coordination', 'operations', 'rescue_teams',
                'emergency_protocol', 'contingency'
            ],
            'government_action': [
                'government', 'authorities', 'officials', 'measures',
                'action', 'plan',
                'policy', 'regulation', 'legislation', 'decree',
                'directive',
                'administration', 'ministry', 'department', 'agency',
                'commission',
                'oversight', 'governance', 'bureaucracy',
                'management', 'protocol',
            ]
        }

```

```

        'implementation', 'enforcement', 'coordination',
'initiative', 'strategy'
    ],

        'community_support': [
            'community', 'neighbors', 'help', 'support',
'solidarity', 'together',
            'volunteers', 'donations', 'charity', 'assistance',
'aid',
            'collaboration', 'cooperation', 'unity',
'mutual_aid', 'grassroots',
            'collective', 'communal', 'local_support',
'neighborhood', 'outreach',
            'community_service', 'voluntary', 'humanitarian',
'social_support', 'helping_hands'
    ],
    'infrastructure': [
        'streets', 'roads', 'bridges', 'damage',
'infrastructure', 'repair',
        'buildings', 'facilities', 'utilities',
'power_lines', 'water_supply',
        'sewage', 'telecommunications', 'transportation',
'public_works', 'construction',
        'maintenance', 'renovation', 'restoration', 'urban',
'structural',
        'engineering', 'technical', 'systems', 'networks',
'installations'
    ],
    'safety_concerns': [
        'danger', 'risk', 'safety', 'warning', 'alert',
'precaution',
        'hazard', 'threat', 'emergency', 'protection',
'security',
        'prevention', 'preparedness', 'caution', 'safeguard',
'vegilance',
        'awareness', 'monitoring', 'assessment',
'evacuation', 'shelter',
        'emergency_protocols', 'safety_measures',
'risk_management', 'contingency', 'readiness'
    ],
    'victims_impact': [
        'affected', 'victims', 'missing', 'displaced',
'lost', 'suffering',

```

```

        'casualties', 'injured', 'homeless', 'stranded',
'trapped',
            'vulnerable', 'evacuated', 'impacted', 'bereaved',
'traumatised',
                'survivors', 'families', 'children', 'elderly',
'residents',
                    'psychological_impact', 'emotional_trauma', 'loss',
'hardship', 'distress'
    ],
    'recovery_efforts': [
        'recovery', 'rebuild', 'restore', 'reconstruct',
'aid', 'assistance',
            'rehabilitation', 'renewal', 'revival',
'regeneration', 'reconstruction',
            'development', 'improvement', 'progress',
'transformation', 'renovation',
            'healing', 'restoration', 'rebuilding',
'remediation', 'recuperation',
            'stabilization', 'normalization', 'reinstatement',
'reestablishment', 'advancement'
    ],
    'financial_measures': [
        'funding', 'budget', 'allocation', 'resources',
'investment', 'money',
            'compensation', 'reimbursement', 'grants', 'loans',
'subsidies',
            'insurance', 'relief_funds', 'financial_aid',
'economic_support', 'donations',
            'monetary_assistance', 'fiscal_measures',
'emergency_funds', 'payment', 'disbursement',
            'financial_relief', 'cost', 'expenses',
'budget_allocation', 'financing'
    ],
    'environmental_impact': [
        'environmental', 'ecological', 'natural', 'climate',
'weather', 'damage',
            'contamination', 'pollution', 'degradation',
'destruction', 'conservation',
            'preservation', 'sustainability', 'biodiversity',
'ecosystem', 'habitat',
            'environmental_assessment', 'impact_study',
'mitigation', 'restoration', 'protection',

```

```

        'natural_resources', 'wildlife', 'vegetation',
'land', 'water'
    ],
    'communication_information': [
        'information', 'communication', 'updates', 'news',
'reports', 'announcements',
        'notifications', 'alerts', 'bulletins', 'advisories',
'messages',
        'media', 'press', 'broadcast', 'publication',
'documentation',
        'transparency', 'disclosure', 'dissemination',
'outreach', 'awareness',
        'public_relations', 'messaging', 'correspondence',
'reporting', 'briefing'
    ],
    'coordination_logistics': [
        'coordination', 'logistics', 'organization',
'planning', 'management', 'operations',
        'deployment', 'distribution', 'allocation',
'arrangement', 'scheduling',
        'supply_chain', 'resources', 'materials',
'equipment', 'supplies',
        'transportation', 'storage', 'inventory',
'procurement', 'delivery',
        'mobilization', 'coordination_center', 'command',
'control', 'administration'
    ],
    'political_response': [
        'political', 'policy', 'governance', 'leadership',
'administration', 'authority',
        'decision-making', 'responsibility',
'accountability', 'oversight', 'management',
        'representation', 'advocacy', 'diplomacy',
'negotiation', 'mediation',
        'legislation', 'regulation', 'enforcement',
'compliance', 'supervision',
        'direction', 'strategy', 'planning',
'implementation', 'execution'
    ],
    'social_impact': [
        'social', 'community', 'society', 'public',
'population', 'people',

```

```

        'wellbeing', 'welfare', 'quality_of_life',
'living_conditions', 'circumstances',
            'social_services', 'social_support', 'social_care',
'social_protection', 'social_assistance',
                'community_impact', 'social_consequences',
'social_effects', 'disruption', 'adjustment',
                    'social_needs', 'social_problems', 'social_issues',
'social_challenges', 'social_recovery'
    ]
}
}

# Discourse markers for power and authority
self.power_markers = {
    'institutional_authority': [
        'must', 'should', 'need to', 'require', 'mandate',
'direct',
            'order', 'demand', 'instruct', 'command', 'decree'
    ],
    'expertise_claims': [
        'experts', 'analysis', 'assessment', 'evaluation',
'study',
            'research', 'evidence', 'data', 'findings',
'investigation'
    ],
    'emergency_authority': [
        'alert', 'warning', 'urgent', 'immediate',
'critical',
            'essential', 'vital', 'crucial', 'emergency',
'priority'
    ]
}

# Communication style markers
self.communication_styles = {
    'formal_bureaucratic': [
        'hereby', 'pursuant', 'accordingly', 'furthermore',
'moreover',
            'therefore', 'consequently', 'subsequently',
'henceforth'
    ],
    'empathetic_personal': [
        'understand', 'support', 'help', 'care', 'concerned',
'together', 'community', 'solidarity', 'unite',
'share'
    ],
    'technical_professional': [

```

```

        'implement', 'coordinate', 'facilitate', 'establish',
'develop',
            'monitor', 'assess', 'evaluate', 'analyze',
'determine'
        ]
    }

def analyze_theme_presence(self, text):
    """Analyze presence of different themes in text"""
    if not isinstance(text, str):
        return {theme: 0 for theme in self.themes.keys()}

    text_lower = text.lower()
    text_words = set(text_lower.split())

    theme_scores = {}
    for theme, keywords in self.themes.items():
        matches = sum(1 for keyword in keywords if
keyword.lower() in text_words)
        theme_scores[theme] = matches

    return theme_scores

def analyze_power_dynamics(self, text):
    """Analyze power dynamics in communication"""
    if not isinstance(text, str):
        return {marker: 0 for marker in
self.power_markers.keys()}

    text_lower = text.lower()
    text_words = set(text_lower.split())

    power_scores = {}
    for marker_type, markers in self.power_markers.items():
        matches = sum(1 for marker in markers if marker.lower() in text_words)
        power_scores[marker_type] = matches

    return power_scores

def analyze_communication_style(self, text):
    """Analyze communication style patterns"""
    if not isinstance(text, str):
        return {style: 0 for style in
self.communication_styles.keys()}

```

```

text_lower = text.lower()
text_words = set(text_lower.split())

style_scores = {}
for style, markers in self.communication_styles.items():
    matches = sum(1 for marker in markers if marker.lower() in text_words)
    style_scores[style] = matches

return style_scores

def get_sentiment_profile(self, text):
    """Get detailed sentiment analysis"""
    if not isinstance(text, str):
        return {'compound': 0, 'pos': 0, 'neg': 0, 'neu': 0}

    scores = self.sia.polarity_scores(text)
    return scores

def analyze_full_discourse(self):
    """Perform comprehensive discourse analysis"""
    analysis_results = []

    for _, row in self.df.iterrows():
        if not isinstance(row['content'], str):
            continue

        # Get all analyses
        themes = self.analyze_theme_presence(row['content'])
        power = self.analyze_power_dynamics(row['content'])
        style = self.analyze_communication_style(row['content'])
        sentiment = self.get_sentiment_profile(row['content'])

    # Combine all features with corrected speaker_type
    result = {
        'speaker_type': 'Government' if row['is_government']
    else 'Public',
        'content': row['content'], # Keep original text
        **themes,
        **power,
        **style,
        **sentiment
    }

    analysis_results.append(result)

```

```

# Convert to DataFrame and force speaker_type as category
    results_df = pd.DataFrame(analysis_results)
    results_df['speaker_type'] =
pd.Categorical(results_df['speaker_type'])

    return results_df

def visualize_discourse_patterns(self):
    """Create visualizations for discourse analysis"""
    results_df = self.analyze_full_discourse()

# 1. Theme Analysis
    ax1 = fig.add_subplot(gs[0, :])
    theme_cols = list(self.themes.keys())
    theme_pivot =
results_df.groupby('speaker_type')[theme_cols].mean()
    sns.heatmap(theme_pivot, cmap='YlOrRd', ax=ax1)
    ax1.set_title('Theme Presence in Discourse')

# 2. Power Dynamics
    ax2 = fig.add_subplot(gs[1, 0])
    power_cols = list(self.power_markers.keys())
    power_pivot =
results_df.groupby('speaker_type')[power_cols].mean()
    sns.heatmap(power_pivot, cmap='YlOrRd', ax=ax2)
    ax2.set_title('Power Dynamics in Communication')

# 3. Communication Style
    ax3 = fig.add_subplot(gs[1, 1])
    style_cols = list(self.communication_styles.keys())
    style_pivot =
results_df.groupby('speaker_type')[style_cols].mean()
    sns.heatmap(style_pivot, cmap='YlOrRd', ax=ax3)
    ax3.set_title('Communication Style Patterns')

# 4. Sentiment Analysis
    ax4 = fig.add_subplot(gs[2, :])
    sentiment_cols = ['compound', 'pos', 'neg', 'neu']
    sentiment_pivot =
results_df.groupby('speaker_type')[sentiment_cols].mean()
    sns.heatmap(sentiment_pivot, cmap='RdYlGn', center=0, ax=ax4)
    ax4.set_title('Sentiment Analysis by Speaker Type')

# 5. Theme Evolution (if date information is available)
    if 'date' in self.df.columns:
        ax5 = fig.add_subplot(gs[3:, :])

```

```

        theme_evolution =
results_df.groupby('speaker_type')[theme_cols].mean()
        theme_evolution.T.plot(kind='bar', ax=ax5)
        ax5.set_title('Theme Usage Comparison')
        ax5.set_xlabel('Themes')
        ax5.set_ylabel('Average Presence')
        plt.xticks(rotation=45)

        plt.tight_layout()
        return fig, results_df

def run_enhanced_analysis(file_path):
    """Run complete enhanced discourse analysis"""
    print("Loading data...")
    df = pd.read_csv(file_path)

    print("Initializing analyzer...")
    analyzer = EnhancedDiscourseAnalyzer(df)

    print("Analyzing discourse patterns...")
    fig, results = analyzer.visualize_discourse_patterns()
    plt.show()

    print("\nDiscourse Analysis Summary:")

    # Calculate and print summary statistics
    gov_results = results[results['speaker_type'] == 'Government'].mean()
    public_results = results[results['speaker_type'] == 'Public'].mean()

    print("\nGovernment Communication Profile:")
    print("- Dominant Themes:", sorted(
        [(theme, score) for theme in analyzer.themes.keys() if (score := gov_results[theme]) > 0],
        key=lambda x: x[1], reverse=True)[:3])
    print("- Power Dynamics:", {k: f"{gov_results[k]:.2f}" for k in analyzer.power_markers.keys()})
    print("- Communication Style:", {k: f"{gov_results[k]:.2f}" for k in analyzer.communication_styles.keys()})

    print("\nPublic Communication Profile:")
    print("- Dominant Themes:", sorted(
        [(theme, score) for theme in analyzer.themes.keys() if (score := public_results[theme]) > 0],
        key=lambda x: x[1], reverse=True)[:3])

```

```

        print("- Power Dynamics:", {k: f"{public_results[k]:.2f}" for k
in analyzer.power_markers.keys()})
        print("- Communication Style:", {k: f"{public_results[k]:.2f}" for k in analyzer.communication_styles.keys()})

    return analyzer

```

Here is where I introduce my datasets in a csv format for all of my actors and organisations:

I have also pasted the analysis from one (@sanchezcastejon - Pedro Sanchez) so you can see how the analysis was performed.

PEDRO SANCHEZ

```

df = comprehensive_analysis('/content/sanchez-complete-data-v2.csv')

analyzer3 = run_analysis('/content/sanchez-complete-data-v2.csv')

analyzer2 =
run_discourse_analysis('/content/sanchez-complete-data-v2.csv')

analyzer1 =
run_enhanced_analysis('/content/sanchez-complete-data-v2.csv')

```

Then, the script analyses the contents and selects and splits official and replies posts. Also groups them by engagement type.

Loading and preprocessing data...

	date	username	handle	\
0	2024-10-29	Pedro Sánchez	@sanchezcastejon	
1	2024-10-30	Goobay	@GaudyGab	
2	2024-10-29	cochicoco	@cochicoco1	
3	2024-10-30	MoniMoniMoni	@Masdemoni	
4	2024-10-30	Pedro Sánchez	@sanchezcastejon	
5	2024-10-31	Sr.Liberal	@SrLiberal	
6	2024-11-01	Pedro Sánchez	@sanchezcastejon	
7	2024-11-01	Pedro Sánchez	@sanchezcastejon	
8	2024-11-02	Pedro Sánchez	@sanchezcastejon	
9	2024-11-01	Magda	@magda_lluis	
10	2024-11-01	Robert PG	@RobertPG94	
11	2024-11-01	AITAXCORP	@AitaXcorp	

12	2024-11-03	Pedro Sánchez	@sanchezcastejon
13	2024-11-04	Pedro Sánchez	@sanchezcastejon
14	2024-11-04	Maria Jesús Montero	@mjmonteroc
15	2024-11-04	Señor de Bien	@SrdeBien
16	2024-11-04	Economía y libertad	@eco Liberal
17	2024-11-05	Merilu	@Merilu_
18	2024-11-05	An	@am_wasp
19	2024-11-05	Sergio Iranzo	@invernomics
20	2024-11-05	Pedro Sánchez	@sanchezcastejon
21	2024-11-05	Ana I. Martín Benito	@AnaIMartinBenito
22	2024-11-05	BichoRaro VOX	@RarosBichos
23	2024-11-05	XDistante	@elequidistante
24	2024-11-05	Pedro Sánchez	@sanchezcastejon
25	2024-11-05	Popk	@Disneymerchan
26	2024-11-05	Jaime Bustillo Gálvez	@J_Bustillo_G
27	2024-11-05	alfayomega	@alfayomega1234
28	2024-11-05	Anti Hacienda	@antihacienda
29	2024-11-05	Pedro Sánchez	@sanchezcastejon
30	2024-11-06	Pedro Sánchez	@sanchezcastejon
31	2024-11-06	Gilicorner	@delelchesiempre
32	2024-11-06	Solzhenitsyn Online	@solzhenitsyn OL
33	2024-11-06	Miguel Ángel Alcarria	@futurovalientes
34	2024-11-06	Amparo	@Amparo70385200
35	2024-11-07	Pedro Sánchez	@sanchezcastejon
36	2024-11-07	Javpolitsp	@javierr48460040
37	2024-11-07	Wingloss	@Wingloss
38	2024-11-07	Mariana	@marianafresneda
39	2024-11-08	Pedro Sánchez	@sanchezcastejon
40	2024-11-11	Pedro Sánchez	@sanchezcastejon
41	2024-11-12	Pedro Sánchez	@sanchezcastejon
42	2024-11-12	Benita dos Carallos	@criaturina
43	2024-11-12	rantings of a libertarian	@RantingsL
44	2024-11-12	Marten Cousland	@MartenCousland

		content	type
\			
0	Following closely with concern information abo...	X Original Post	
1	Should have invested in prevention, but YOU or...	X Reply	
2	These are the ones who are nearby. Corrupt!	X Reply	
3	[Image response]	X Reply	
4	Spoken with @antoniooguterres, @vonderleyen and...	X Original Post	
5	Since you've been President there's no disaste...	X Reply	
6	Visited AEMET operations center. DANA not over...	X Original Post	
7	Thanks to public servants and volunteers. Visi...	X Original Post	
8	Government assisting regional authorities. 4,8...	X Original Post	
9	Send the army now!! Less talk and more action!!!	X Reply	

10	You're 3 days late... But quick to control RTVE.	X Reply
11	Only sending 2% of our army to help. What's th...	X Reply
12	Addressing public anxiety. Priorities: save li...	X Original Post
13	Postponing second income tax payment for affec...	X Original Post
14	Treasury suspends IRPF collection for DANA-aff...	X Original Post
15	Suspending or postponing?	X Reply
16	Not screwing you today, screwing you tomorrow	X Reply
17	Still time to collaborate with the left and ma...	X Reply
18	You're a coward. People have lost everything! ...	X Reply
19	Postpone? Couldn't you have a humanitarian ges...	X Reply
20	Approved €10.6 billion for reconstruction. Dir...	X Original Post
21	Priority remains! Everyone needs food, medicat...	X Reply
22	Don't forget volunteers who put much money fro...	X Reply
23	You've hurried. No national emergency, no extr...	X Reply
24	Launching @InfoDanaGob for official updated in...	X Original Post
25	The more official information and transparency...	X Reply
26	Important to have a channel for information ab...	X Reply
27	Will it be supervised by an expert committee?	X Reply
28	You're the last person in the world I'd trust	X Reply
29	Will not attend EU Council in Budapest to addr...	X Original Post
30	EIB preparing €900 million financial package f...	X Original Post
31	Hope besides reconstruction, investment in ref...	X Reply
32	Of the 900, they'll steal 1000. Corrupt.	X Reply
33	Economic aid necessary but human lives are pri...	X Reply
34	Excellent, then what's needed is details on ho...	X Reply
35	Met with ICO and Insurance Compensation Consor...	X Original Post
36	You wanted to abandon Valencians to blame PP m...	X Reply
37	Anti-hoax law. Here in UK Starmer did it, let'...	X Reply
38	They grant them €6000 to be returned in 3 mont...	X Reply
39	Met with social organizations' presidents to d...	X Original Post
40	Government focused on reconstruction, response...	X Original Post
41	Call to action from COP29 regarding climate di...	X Original Post
42	'Save the planet'.	X Reply
43	Natural disasters aren't prevented, they're ma...	X Reply
44	Sánchez violated law to renounce disaster mana...	X Reply

```

        engagement_type \
0      emergency response
1      policy criticism
2      public criticism
3      visual criticism
4      diplomatic update
5      leadership criticism
6      status update
7      gratitude expression
8      resource deployment

```

```

9           public demand
10          response criticism
11          deployment criticism
12          strategy announcement
13          aid announcement
14          policy detail
15          policy question
16          policy criticism
17          political advice
18          harsh criticism
19          policy criticism
20          aid announcement
21          priority reminder
22          volunteer recognition
23          timing criticism
24          information initiative
25          positive feedback
26          supportive feedback
27          skeptical question
28          distrust expression
29          priority announcement
30          funding announcement
31 environmental suggestion
32 corruption accusation
33 criticism of response
34 accountability request
35 coordination update
36 political criticism
37 policy suggestion
38 aid criticism
39 stakeholder engagement
40 strategy statement
41 climate action
42 skeptical response
43 management criticism
44 legal criticism

```

	processed_text	sentiment	\
0	following closely with concern information abo...	-0.100000	
1	should have invested in prevention but you ord...	0.000000	
2	these are the ones who are nearby corrupt	-0.500000	
3	image response	0.000000	
4	spoken with and other international leaders ab...	-0.062500	
5	since youve been president theres no disaster ...	0.000000	
6	visited aemet operations center dana not over ...	-0.050000	
7	thanks to public servants and volunteers visit...	0.100000	

8	government assisting regional authorities 4800...	-0.100000
9	send the army now less talk and more action	0.144444
10	you're 3 days late but quick to control rtve	0.016667
11	only sending 2 of our army to help what's the o...	-0.062500
12	addressing public anxiety priorities save live...	0.000000
13	postponing second income tax payment for affec...	0.000000
14	treasury suspends irpf collection for danaaffe...	0.000000
15	suspending or postponing	0.000000
16	not screwing you today screwing you tomorrow	0.000000
17	still time to collaborate with the left and ma...	-0.025000
18	you're a coward people have lost everything you...	0.000000
19	postpone couldn't you have a humanitarian gestu...	0.000000
20	approved 106 billion for reconstruction direct...	0.100000
21	priority remains everyone needs food medicatio...	0.000000
22	don't forget volunteers who put much money from...	0.350000
23	you've hurried no national emergency no extraor...	-0.083333
24	launching for official updated information	0.000000
25	the more official information and transparency...	0.500000
26	important to have a channel for information ab...	0.075000
27	will it be supervised by an expert committee	0.000000
28	you're the last person in the world id trust	0.000000
29	will not attend eu council in budapest to addr...	0.000000
30	eib preparing 900 million financial package fo...	0.000000
31	hope besides reconstruction investment in refo...	0.500000
32	of the 900 they'll steal 1000 corrupt	-0.500000
33	economic aid necessary but human lives are pri...	0.300000
34	excellent then what's needed is details on how ...	1.000000
35	met with ico and insurance compensation consor...	0.000000
36	you wanted to abandon valencians to blame pp m...	0.000000
37	antihoax law here in uk starmer did it lets do...	0.000000
38	they grant them 6000 to be returned in 3 month...	0.000000
39	met with social organizations presidents to di...	0.033333
40	government focused on reconstruction response ...	0.000000
41	call to action from cop29 regarding climate di...	0.100000
42	save the planet	0.000000
43	natural disasters aren't prevented they're manag...	0.100000
44	sánchez violated law to renounce disaster mana...	-0.500000

is_government

0	True
1	False
2	False
3	False
4	True
5	False
6	True

```
7      True
8      True
9      False
10     False
11     False
12     True
13     True
14     False
15     False
16     False
17     False
18     False
19     False
20     True
21     False
22     False
23     False
24     True
25     False
26     False
27     False
28     False
29     True
30     True
31     False
32     False
33     False
34     False
35     True
36     False
37     False
38     False
39     True
40     True
41     True
42     False
43     False
44     False
```

Basic Statistics:

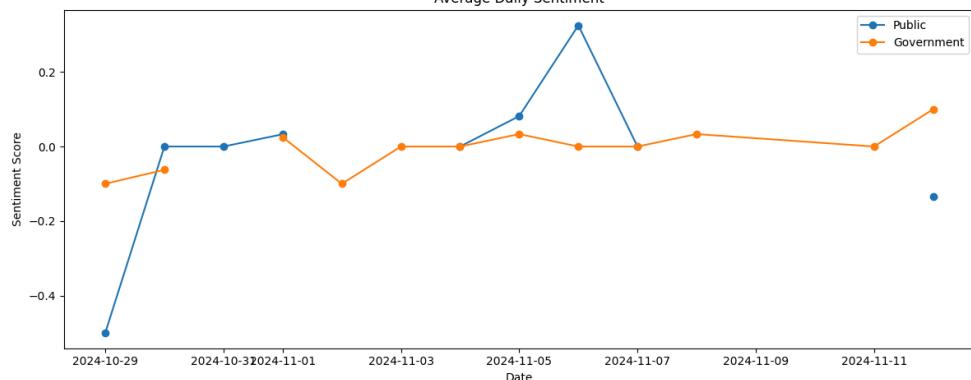
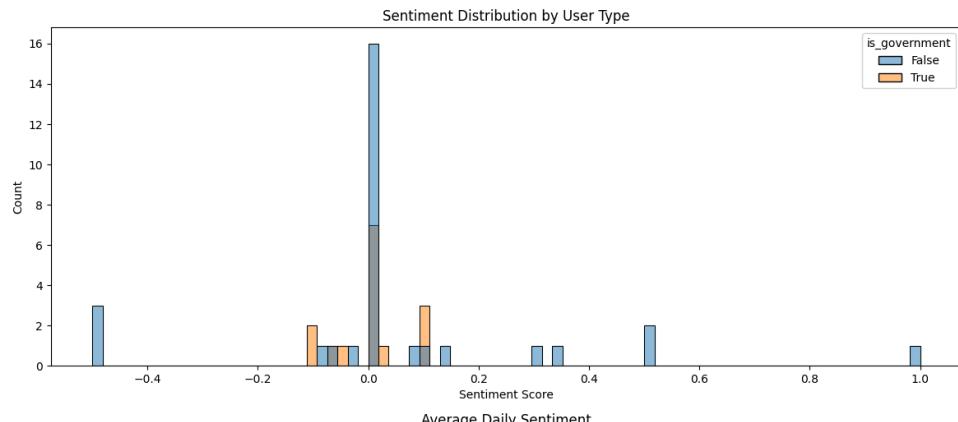
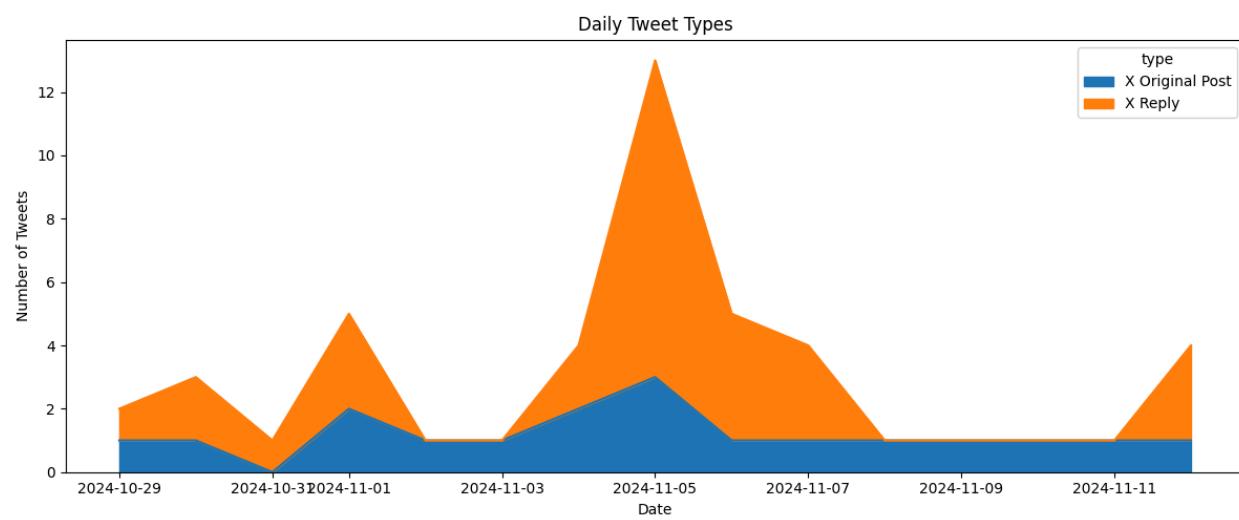
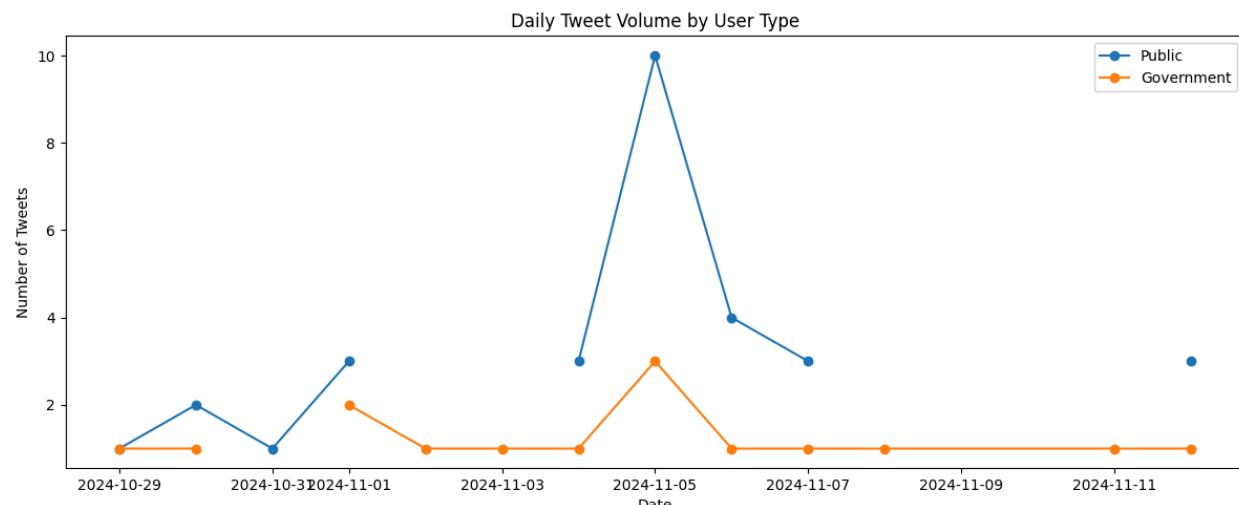
Total Tweets: 45

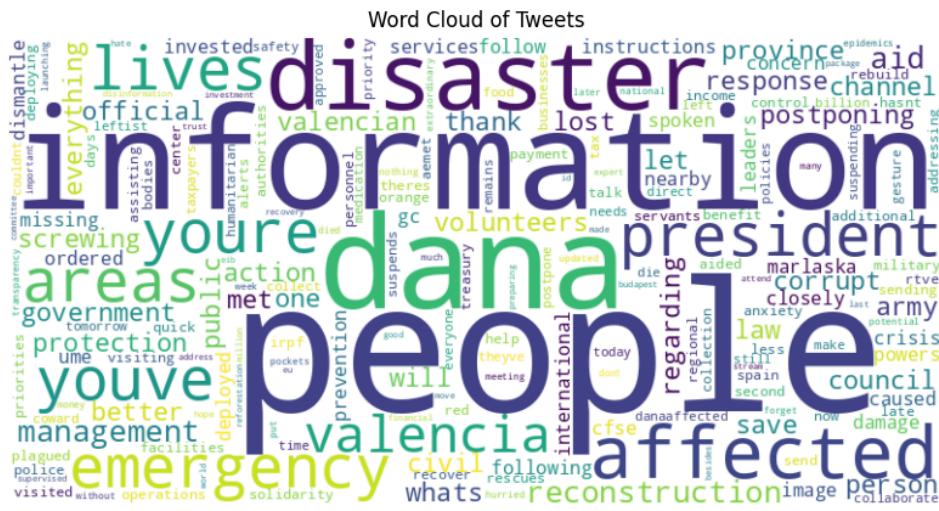
Government Tweets: 15

Public Tweets: 30

Date Range: 2024-10-29 to 2024-11-12

Generating visualizations...





Loading data...

Analyzing discourse patterns...

Discourse Analysis Summary:

Government Communication Style:

Sentiment Profile:

```
{'compound': '-0.006', 'pos': '0.098', 'neg': '0.113', 'neu': '0.789'}
```

Discourse Markers:

```
{'authority': '0.067', 'urgency': '0.200', 'solidarity': '0.000',  
'technical': '0.133', 'empathy': '0.067'}
```

Public Communication Style:

Sentiment Profile:

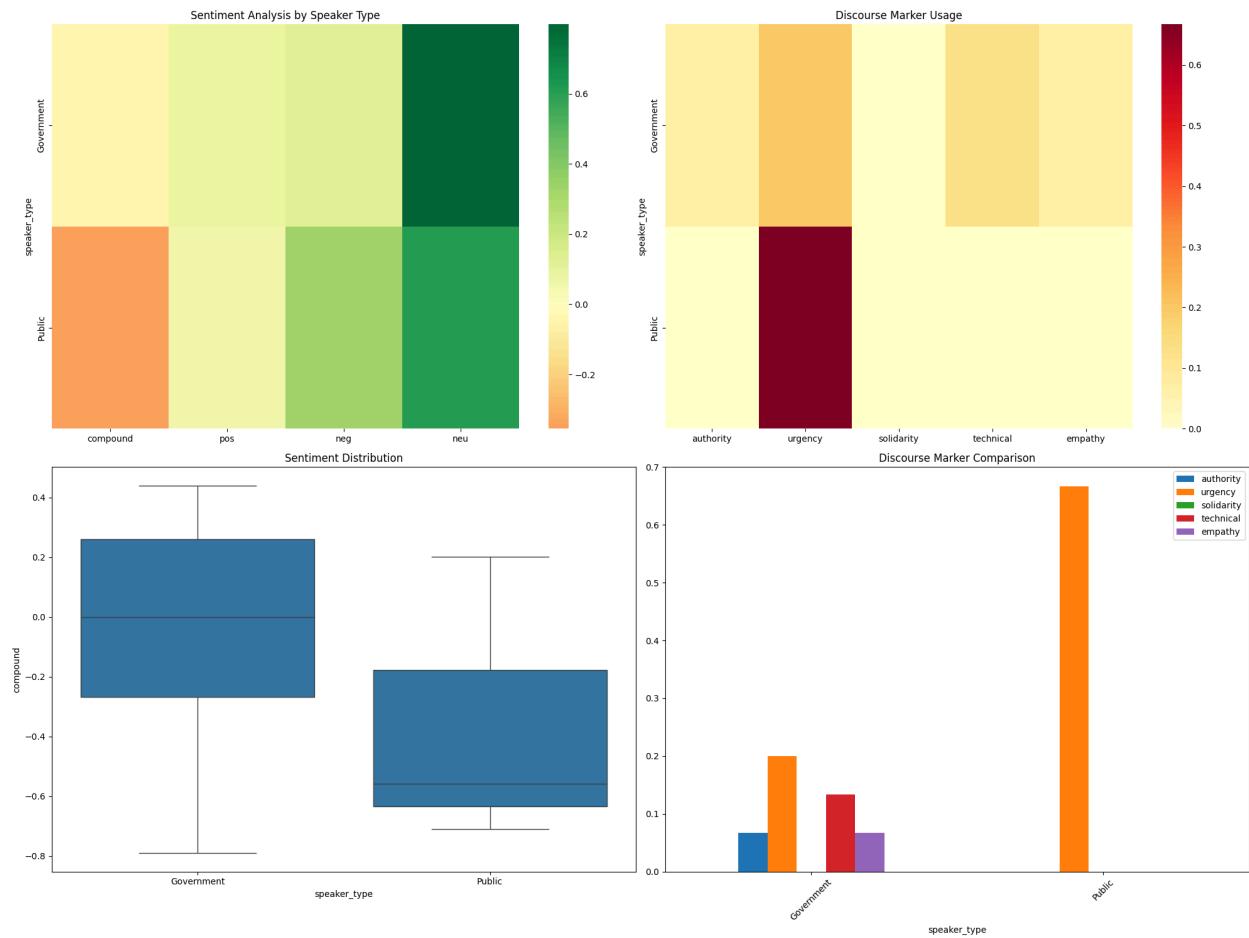
```
{'compound': '-0.075', 'pos': '0.122', 'neg': '0.151', 'neu': '0.726'}
```

Discourse Markers:

```
{'authority': '0.167', 'urgency': '0.033', 'solidarity': '0.067',  
'technical': '0.000', 'empathy': '0.000'}
```

Loading data...

Analyzing discourse patterns...



CARLOS MAZON

```
df = comprehensive_analysis('/content/CarlosMazon.csv')

analyzer3 = run_analysis('/content/CarlosMazon.csv')

analyzer2 = run_discourse_analysis('/content/CarlosMazon.csv')

analyzer1 = run_enhanced_analysis('/content/CarlosMazon.csv')
```

AEMET VALENCIA

```
df = comprehensive_analysis('/content/aemet-complete-data-v2.csv')

analyzer3 = run_analysis('/content/aemet-complete-data-v2.csv')
```

```
analyzer2 =
run_discourse_analysis('/content/aemet-complete-data-v2.csv')

# Example usage:
analyzer1 =
run_enhanced_analysis('/content/aemet-complete-data-v2.csv')
```

GENERALITAT VALENCIANA

```
df = comprehensive_analysis('/content/generalitat-complete-data.csv')
analyzer3 = run_analysis('/content/generalitat-complete-data.csv')

analyzer2 =
run_discourse_analysis('/content/generalitat-complete-data.csv')

analyzer1 =
run_enhanced_analysis('/content/generalitat-complete-data.csv')
```

CENTRE COORDINACIÓ EMERGÈNCIES

```
df = comprehensive_analysis('/content/gva-emergency-complete.csv')

analyzer3 = run_analysis('/content/gva-emergency-complete.csv')

analyzer2 = run_discourse_analysis('/content/gva-emergency-complete.csv')

analyzer1 = run_enhanced_analysis('/content/gva-emergency-complete.csv')
```