Analysis of Online Public Discourse and Sentiment during Nuclear Emergencies: A Case Study of YouTube Comments

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Stakeholder Engagement for Nuclear Power Programmes



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Data and Methodology

- 239 158 comments from 448 most relevant YouTube videos on "nuclear accident"
- Topic analysis
- Sentiment analysis
- Misinformation analysis
- Policy implications



Generated using ChatGPT



Comment Distribution by Topic

0

34.6%

6.2%

16.2%

3



Topic 0: Personal Reactions and Emotions	 Personal, emotional responses to nuclear disasters using informal language to express fear, sadness, humor, skepticism, and empathy. 	26.6%
Topic 1: Humorous, Informal, and Meme-related Comments	 Playful, meme-driven discussions and informal language about nuclear incidents, mixing humor with internet slang and pop culture references. 	Topic Distribution Over Time (Percentage)
Topic 2: Nuclear Energy Debate and Safety Concerns	 Debates over nuclear energy's viability, safety, environmental impact, and waste management, often comparing nuclear power with fossil fuels and renewables. 	80 - 80 - 80 -
Topic 3: Historical, Political, and Human Consequences of Nuclear Disasters	 Nuclear disasters within historical and geopolitical contexts, addressing health, environmental, and political issues alongside military and human impacts. 	Percentage
Topic 4: Appreciation and Feedback on Video Content	 Positive viewer feedback on video quality, educational content, and presentation, with praise for creators and requests for more similar content. 	20 0 2011 2013 2015 2017 2019 2021 Month



2023

2025

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All Comments

	Likes	Responses	Sentiment score	Comment length
Likes	1			
Responses	0.610***	1		
Sentiment score	-0.001	-0.012***	1	
Comment length	0.005***	0.036***	-0.088***	1

	Transcript sentiment score	Comments average sentiment score
Transcript sentiment score	1	
Comments average sentiment score	0.147***	1



Sentiment Distribution

positive





Comments Explicitly Dealing with Misinformation















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Policy Implications

		5		
Targeted Communication	Enhanced Public Education	Real-Time Data Monitoring	Integration with Regulatory Agencies	Cross-Sector Collaboration
 Strategies Develop comprehensive, engaging, and fact-based debunking messages to counter misinformation. 	 Increase initiatives that educate the public on nuclear energy, reactor safety, and radiation, ensuring technical accuracy and accessibility. 	 Establish real-time social media monitoring systems to quickly identify and address emerging misinformation trends. 	• Leverage real-time search and social media data to support the work of the IAEA and similar agencies in proactive risk communication and decision-making.	 Encourage partnerships between experts, regulatory bodies, and media platforms to promote accurate and informed nuclear discourse.

