"Never Again" in the Digital Age: Mapping Online Narratives on Jews and Hate Speech through Network Analysis

L. De Benedictis[1] *and G. Giordano*[2] *and M.P. Vitale*[2]

[1] Department of Economics, Statistics and Business, Universitas Mercatorum, Italy
[2]Department of Political and Social Studies, University of Salerno, Italy

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Session 3E: 35-Identification and Analysis of Online Racism and Xenophobia against (Im)migrants

Organizers/Chairs: M. Misuraca, G. Giordano, L. Fontanella

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TOLERANT Identification and Critical Analysis of Online Racismo and Xenophobia against (im)migrants and Roma people

Outline

- Background
- Aims & Methods
- Case study
- Data Collection & Preprocessing
- Network Analysis
- NPL and Text Mining
- Concluding remarks

Background

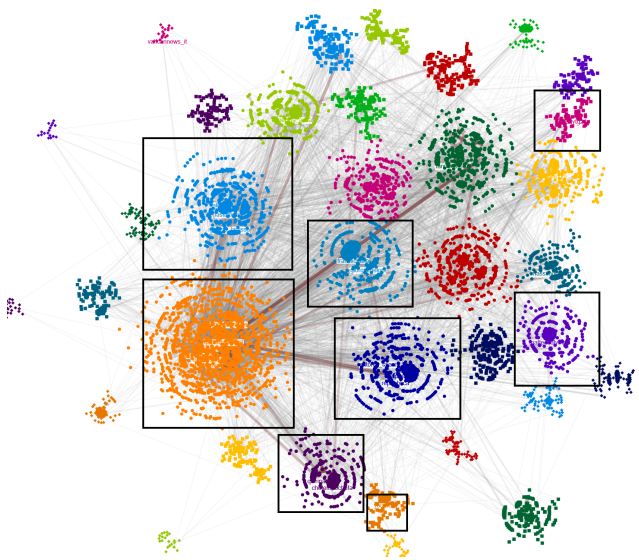
- In recent years, the proliferation of hate speech on social media has raised significant concerns regarding its impact on individuals and society. It is a significant and complex issue that is becoming prevalent with the rise of digital communication platforms [Alkomah, Ma, 2022]
- Hate speech refers to a *discourse that demeans, intimidates, or incites violence against individuals or vulnerable and minority groups based on attributes* (e.g., *race, religion, ethnic origin, sexual orientation, disability, gender*) [Siege, 2020; de la Fuente et al. (eds), 2023; Vandebosch, Rothmund, 2024]
- Mixed-method approaches, combining network analysis methodologies with qualitative studies [Fonseca et al., 2024; Pontes et al., 2024], Natural Language Processing (NLP) and Text Mining [Rawat et al., 2024; Wong 2024] have seen a surge in interest in the hate speech detection

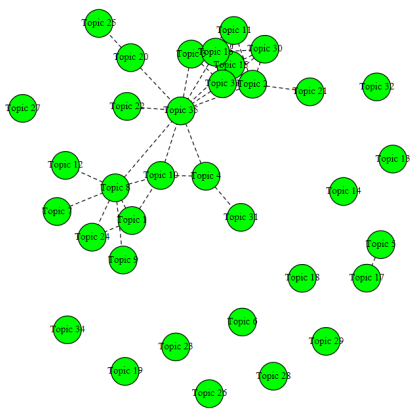
Aims

- We propose an integrated approach based on network analysis (NA) and natural language processing (NLP) to detect and analyze online hate speech propagation
- By examining interactions among online users on social media:
  - influential users and potential hot-spots with high values of network centrality indices as well as groups of users derived through community detection algorithms [Clauset et al., 2004] are identified
  - top topics and topics correlation are derived through the estimation of Structural Topic Models -STM [Roberts et al., 2019]

Methods

- Our strategy of analysis leverages both textual features and network structures to uncover hidden patterns and provide deeper insights into the dynamics of online debate
- Data collected on social media are used to define networks of:
  - USERS (e.g., retweets, mentions, replies to in X platform)
  - WORDS (topics map using tweets' content)





Case study: Antisemitism

- Among the minority groups, Jews have been the cyclical target of physical attacks and of hate speeches. "*Antisemitism is discrimination, prejudice,* **hostility** *or violence against Jews*" [Jerusalem Declaration, 2020]
- Institutions and research centers have reported a recent significant increase in online hate speeches against Jews [CDEC, 2024, 2025]
- Since October 7th, 2023, the terrorist attack by Hamas, and the subsequent Israeli military response and the bombing of the Gaza strip, the tendency to equate the Israeli government with the Jews and to manifest hostility against the Jews is a new kind of online antisemitism
- This new kind of antisemitism tends to mix the present (Israel and the Jewish diaspora) and the past (the Jewish Holocaust) in a general hostility against the Jews

The International Holocaust Remembrance Day (in Italy)

"Giorno della Memoria" – January, 27th (since 2000)

- Articles 1 and 2 of Law No. 211 of 20 July 2000 define the purposes and commemorations of the Day of Remembrance as follows:
- "The Italian Republic recognizes January 27, the date of the liberation of the Auschwitz gates, as the 'Day of Remembrance,' in order to recall the Shoah (the extermination of the Jewish people), the racial laws, the Italian persecution of Jewish citizens, the Italians who suffered deportation, imprisonment, and death, as well as those who, in different camps and alignments, opposed the project of extermination and, at the risk of their own lives, saved others and protected the persecuted"
- "On the occasion of the 'Day of Remembrance' referred to in Article 1, ceremonies, initiatives, meetings, and collective moments of recounting events and reflection are organized, particularly in schools of all levels, on what happened to the Jewish people and to the Italian military and political deportees in the Nazi camps, so as to preserve in Italy's future the memory of a tragic and dark period in the history of our country and of Europe, and to ensure that such events can never happen again"
- The International Holocaust Remembrance Day was established by United Nations General Assembly Resolution 60/7, adopted on November 1, 2005, during the 42nd plenary meeting

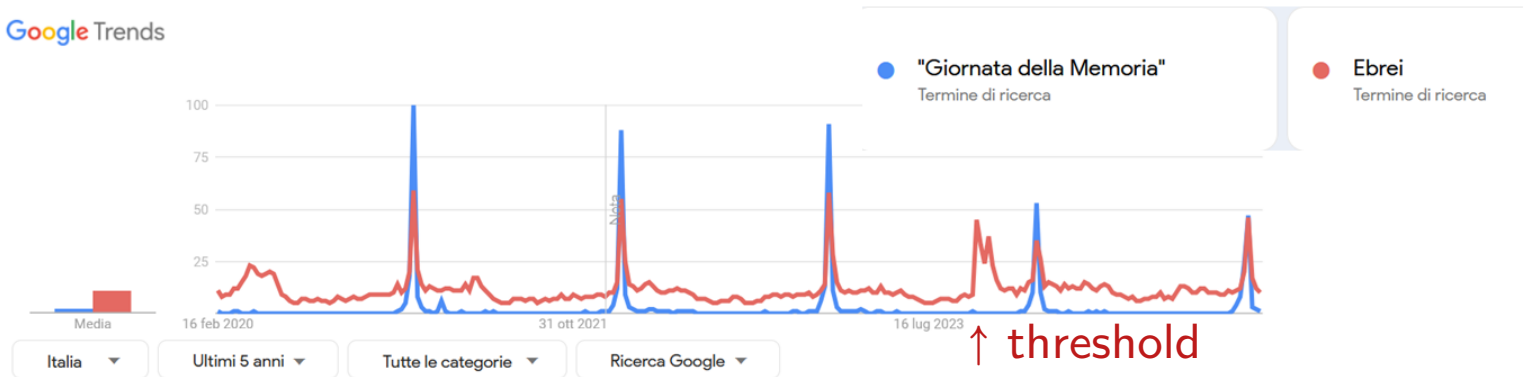
The International Holocaust Remembrance Day (in Italy)

"Giorno della Memoria" – January, 27th (since 2000)

- To commemorate the victims of the Shoah, schools, universities, public administrations, cultural institutions, and television programs organize events featuring testimonies from Holocaust survivors and other initiatives. The President of the Republic and political authorities visit key memorial sites from which many Jews were deported
- This annual observance also sparks online debates concerning the Shoah and the contemporary relevance of the "never again" pledge, especially among younger generations and institutions
- These institutional initiatives sometimes give rise to tensions or controversies
- In certain cases, such debates conceal subtle forms of antisemitism

Motivating data

- Analysis of Google searches, collected in Google Trends, during the week of the Holocaust Remembrance Day, before and after the Hamas terrorist attack, and the subsequent outbreak of the Israeli–Palestinian conflict
- Compare the trend in "Giorno della Memoria" and "Ebrei" searches, we notice the double-spike in the red time-series around October, 7th 2023 (our threshold value)



Evidence

- Periodicity of the public attention to the "Giorno della Memoria"
- The average level of the (red and blue) spikes before the threshold is **higher** than the one after the threshold

Data collection

- Textual data collected from the 𝕏 platform during the same week around the commemoration of the Holocaust Remembrance Day (January, 27th) during 5 years (2021-2025)

  QUERY: ("Giornata della Memoria" OR Olocausto OR Shoah OR Nazismo OR Fascismo OR Ebrei OR Antisemitismo OR Sionismo OR Antisionismo OR shoah OR 27gennaio OR lilianasegre OR primolevi) lang:it

- 𝕏 data tweets' content, users' characteristics, and interactions among users (retweets, mentions, replies, quotations)

Data Cleaning

- Removing multiple edges, self-loops, off-topics tweets
- Text normalization, stop-words removal, TF-IDF weighting system

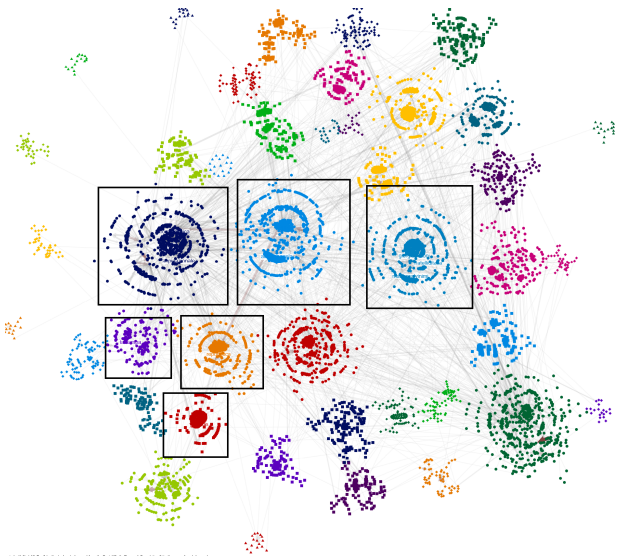
1. Network Analysis - First findings

	2022	2023	2024	2025
Vertices (X Users)	8895	9405	8231	10168
Arcs	12060	12420	14822	16398
Reciprocated Vertex Pair Ratio	0,019	0,0211	0,0256	0,0233
Maximum Vertices in a Connected Component	6303	7423	8231	8903
Maximum Edges in a Connected Component	10512	11257	14822	15617
Maximum Geodesic Distance (Diameter)	18	20	16	14
Average Geodesic Distance	6,1968	6,013734	5,3328	5,3328
Graph Density (Index number, base=2022)	100,0	92,1	143,6	104,1
Communities	979 groups	765 groups	560 groups	576 groups
	(42 groups >15 vertices)	(47 groups >15 vertices)	(40 groups >15 vertices)	(35 groups >15 vertices)

2022-23 vs 2024-25

- Vertices drop in 2024 and rise again in 2025
- More discussions along time (arcs)
- Stable level of links' reciprocation
- Connectivity increases (connected component and geodesic distance)
- Density: up and down
- Concentration in clusters and higher number of isolated voices

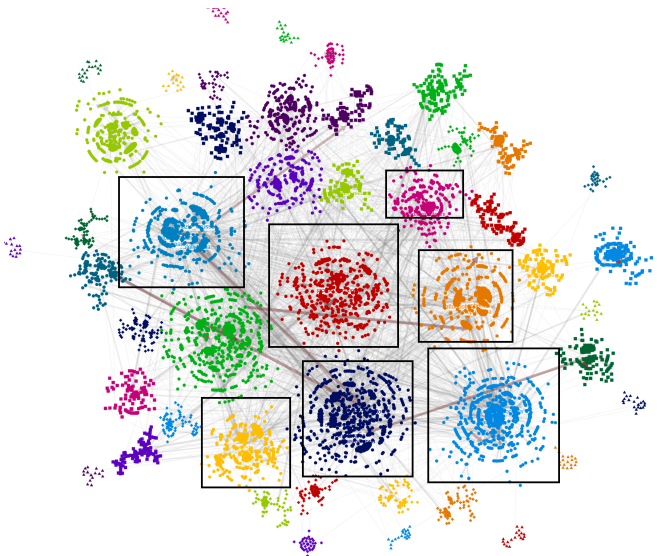
Graph visualization, influential users, potential hot-spots, and communities - week 2022



	Name	Indegree	Betweenness	Closeness	Eigenvector	Groups
pberizzi	Paolo Berizzi	291	6233824,32	0,19	0,26	1
italiantifa	Rete Italiana Antifascista	189	362510,05	0,17	0,23	1
anpinazionale	A.N.P.I. Nazionale	82	1448855,38	0,18	0,08	1
romaebraica	Comunità Ebraica di Roma	43	2205073,89	0,18	0,01	1
albertoangela	Alberto Angela	107	2301093,85	0,17	0,00	2
giorgiameloni	Giorgia Meloni	182	3961733,50	0,17	0,00	4
matteosalvinimi	Matteo Salvini	70	1586573,84	0,17	0,00	4
fratelliditalia	Fratelli d'Italia IT	38	589181,64	0,15	0,00	4
repubblica	Repubblica	96	4005061,07	0,18	0,01	6
lastampa	La Stampa	44	974884,65	0,16	0,00	11
youtube	YouTube	80	1177690,10	0,14	0,00	17

- Influential $\mathbb{X}$ users and potential hot-spots (Paolo Berizzi, Rete Italiana Antifascista, A.N.P.I.— Alberto Angela — Giorgia Meloni, Matteo Salvini, Fratelli d'Italia — Repubblica, La Stampa — YouTube)
- Groups with journalists and news outlets (1, 6, 11), political factions and politicians (4), television programs and broadcasters (2, 17)

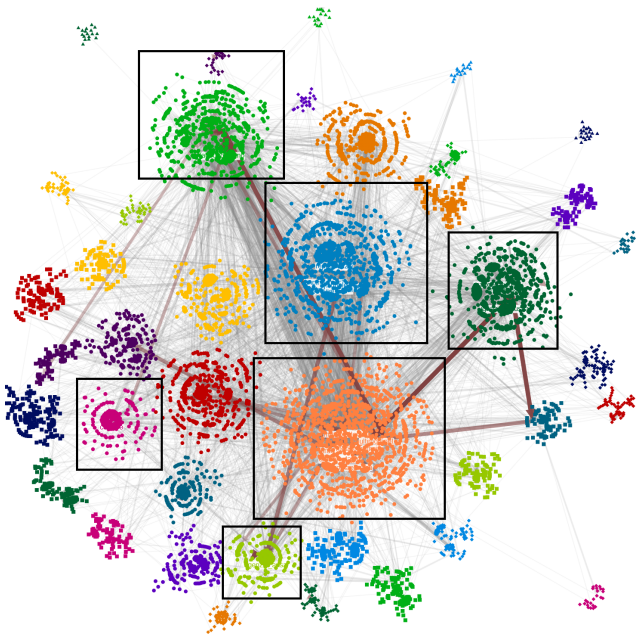
Graph visualization, influential users, potential hot-spots, and communities - week 2023



	Name	Indegree	Betweenness	Closeness	Eigenvector	Groups
senatostampa	Senato Repubblica	64	1943300,79	0,20	0,02	1
guidocrosetto	Guido Crosetto	64	1584722,13	0,19	0,03	1
fabfazio	Fabio Fazio	151	2311865,35	0,19	0,08	2
raiuno	Rai1	110	1865134,06	0,19	0,10	2
chetempochefa	Che Tempo Che Fa	71	1131949,04	0,18	0,03	2
giorgiameloni	Giorgia Meloni	208	4879836,92	0,21	0,47	3
quirinale	Quirinale	180	5275201,27	0,21	0,41	3
fratellliditalia	Fratelli d'Italia IT	134	2899140,42	0,20	0,14	3
ignazio_larussa	Ignazio La Russa	118	3374750,17	0,20	0,07	3
jacopo_iacoboni	jacopo iacoboni	85	1662404,10	0,18	0,01	5
pberizzi	Paolo Berizzi	131	3847028,69	0,20	0,05	6
repubblica	Repubblica	102	2498891,49	0,20	0,03	6
fattoquotidiano	Il Fatto Quotidiano	92	3230787,84	0,20	0,02	6
linkiesta	Linkiesta	52	1586817,70	0,19	0,01	7
marcofattorini	Marco Fattorini	109	3573758,98	0,20	0,02	9
lastampa	La Stampa	45	1546579,09	0,19	0,02	19

- Influential $\mathbb{X}$ users and potential hot-spots (Senato Repubblica, Quirinale, Guido Crosetto, Giorgia Meloni, Fratelli d'Italia, Ignazio La Russa — Jacopo Iacoboni, Paolo Berizzi, Repubblica, Il Fatto Quotidiano, Linkiesta, Marco Fattorini, La Stampa — Fabio Fazio, Rai1, Che Tempo Che Fa)
- Groups with journalists and news outlets (5, 6, 7, 9, 19), political factions and politicians (1,3), television programs and broadcasters (2)

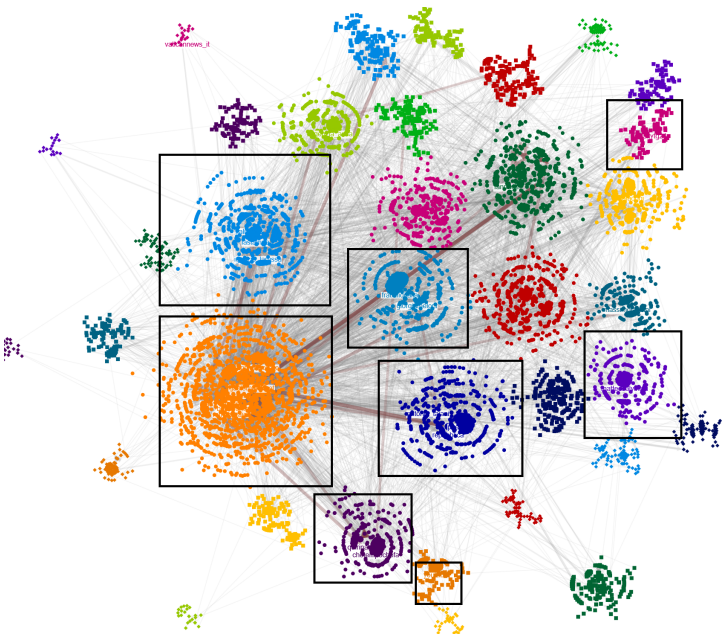
Graph visualization, influential users, potential hot-spots, and communities - week 2024



	Name	Indegree	Betweenness	Closeness	Eigenvector	Groups
antonio_tajani	Antonio Tajani	117	2445191,18	0,28	0,03	1
ilfoglio_it	Il Foglio	117	2445191,18	0,28	0,03	1
marcofattorini	Marco Fattorini	117	2445191,18	0,28	0,03	1
israelinitaly	Israele in Italia	117	2445191,18	0,28	0,03	1
federicorampini	Federico Rampini	117	2445191,18	0,28	0,03	1
italymfa	Farnesina IT	117	2445191,18	0,28	0,03	1
ultimoranet	Ultimora.net	117	2445191,18	0,28	0,03	1
repubblica	Repubblica	224	5591780,95	0,24	0,04	2
pberizzi	Paolo Berizzi	114	2395146,38	0,23	0,02	2
giorgiameloni	Giorgia Meloni	109	3434433,32	0,24	0,01	2
pdnetwork	Partito Democratico IT EU	101	2616213,50	0,23	0,01	2
quirinale	Quirinale	56	1476283,27	0,23	0,01	2
ignazio_larussa	Ignazio La Russa	148	3193240,80	0,23	0,01	3
matteosalvinimi	Matteo Salvini	107	1901610,45	0,22	0,01	3
fratelliditalia	Fratelli d'Italia IT	79	1325963,72	0,22	0,01	3
fattoquotidiano	Il Fatto Quotidiano	129	2900221,27	0,24	0,08	4
agenzia_ansa	Agenzia ANSA	181	3786771,20	0,24	0,02	8
corriere	Corriere della Sera	187	4329217,70	0,23	0,03	9

- Influential 𝕏 users and potential hot-spots (Israele in Italia, Marco Fattorini, Federico Rampini, Farnesina, Quirinale, Paolo Berizzi — Antonio Tajani, Giorgia Meloni, Partito Democratico, Ignazio La Russa, Matteo Salvini, Fratelli d'Italia — Il Fatto Quotidiano, Corriere della Sera, Repubblica, Il Foglio, Agenzia ANSA)
- Groups with journalists, associations and news outlets (1, 4, 9), political factions and politicians (2, 3), Press Agency (4)

Graph visualization, influential users, potential hot-spots, and communities - week 2025



	Name	Indegree	Betweenness	Closeness	Eigenvector	Groups
anpinazionale	A.N.P.I. Nazionale	160	3429650,60	0,24	0,35	1
corriere	Corriere della Sera	152	5153600,37	0,25	0,16	1
ilfoglio_it	Il Foglio	123	3324997,03	0,24	0,13	1
gadlernertweet	Gad Lerner	105	1220109,10	0,24	0,26	1
marcofattorini	Marco Fattorini	57	1266765,06	0,22	0,02	1
bettafiorito	Elisabetta Fiorito	50	738638,61	0,22	0,05	1
romaebraica	Comunità Ebraica di Roma	49	1185311,94	0,23	0,05	1
ilriformista	Il Riformista	35	256315,01	0,22	0,06	1
lastampa	La Stampa	160	5140227,04	0,25	0,15	2
ignazio_larussa	Ignazio La Russa	73	1237761,27	0,22	0,03	2
italiantifa	Rete Italiana Antifascista	57	1171157,14	0,22	0,07	2
fratelliditalia	Fratelli d'Italia IT	241	4841705,31	0,23	0,15	4
giorgiameloni	Giorgia Meloni	106	3083423,51	0,24	0,07	4
pberizzi	Paolo Berizzi	218	5123969,81	0,24	0,22	6
repubblica	Repubblica	112	2772462,70	0,24	0,13	6
elonmusk	Elon Musk	38	1234464,96	0,21	0,02	6
antonio_tajani	Antonio Tajani	29	566023,31	0,21	0,01	6
chetempochefa	Che Tempo Che Fa	150	3568818,45	0,23	0,09	10
quirinale	Quirinale	83	2400053,44	0,23	0,06	10
matteosalvinimi	Matteo Salvini	118	2328012,48	0,22	0,02	11
youtube	YouTube	49	893208,60	0,21	0,02	18
skytg24	Sky tg24	26	321404,87	0,20	0,01	21

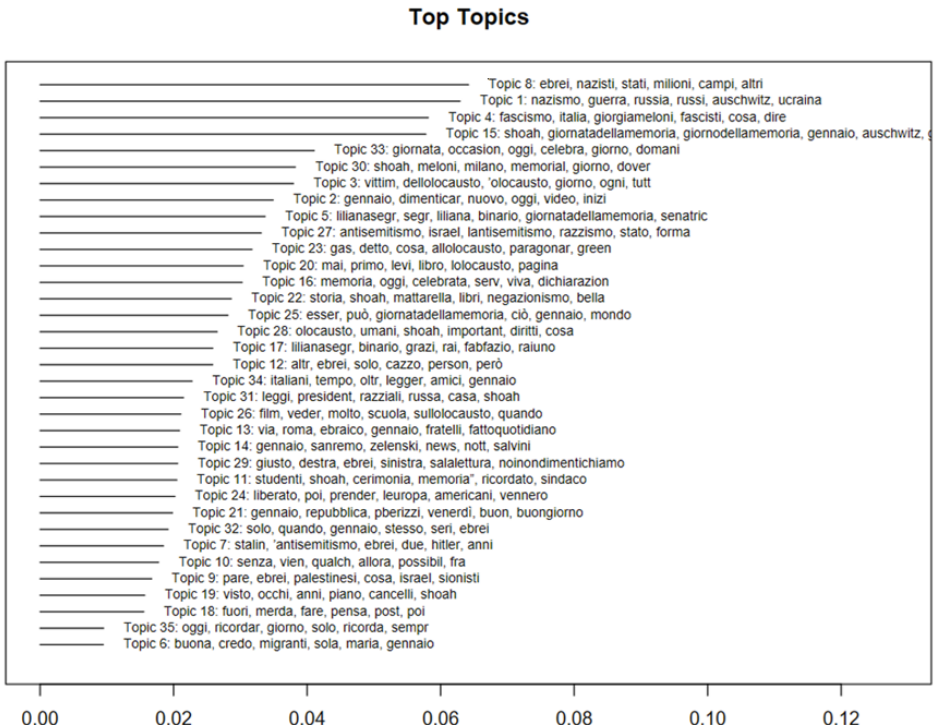
- Influential $\mathbb{X}$ users and potential hot-spots (A.N.P.I., Roma ebraica, Rete Italiana Antifascista, Paolo Berizzi, La Stampa, Corriere della Sera, La Repubblica — Che Tempo Che Fa — Fratelli D'Italia, Giorgia Meloni, Matteo Salvini, Ignazio La Russa, Quirinale)
- Groups with journalists, associations and news outlets (1, 2, 6), political factions and politicians 4, 11), television programs and broadcasters (10, 18, 21)

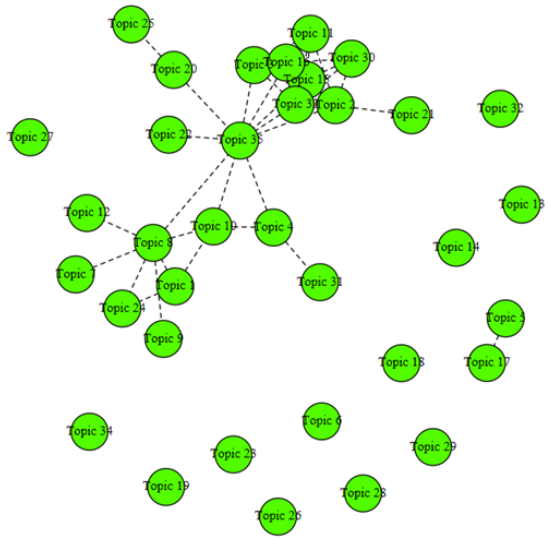
2. Tweets content analysis: Word clouds of weeks 2023 and 2024

- 2023: Auschwitz, Anti-Semitism, Holocaust, Liliana Segre, ...
- 2024: Palestinians, Palestine, Gaza, Hamas, Israeli, Zionism, Genocide, ..., offensive language, hostility

STM Top Topics and Correlation -2023

- Text Mining produces the Terms × Documents matrix
- Structural Topic Model (STM): 35 Top Topics are selected and Topic Correlations are represented as node-topic graph for 2023 and 2024

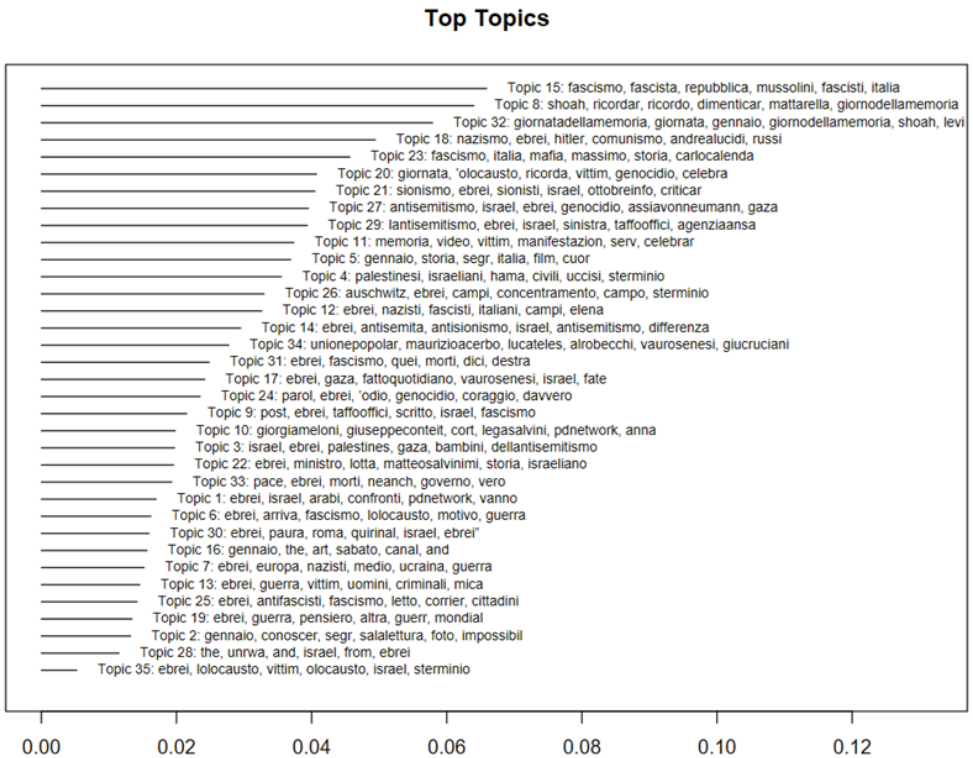


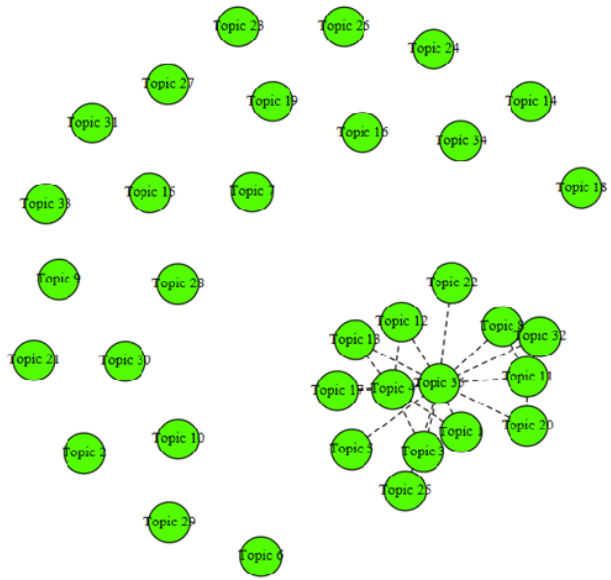


2023

- Topics report the traditional themes of the Holocaust Remembrance Day (**Topic 8** is the top and the central topic)
- A group of topics related to themes of politics, representative people and Holocaust memories

STM Top Topics and Correlation -2024





2024

- Data represent less cohesive concepts
- Traditional themes of the Holocaust Remembrance Day are less central (**Topic 15** is the top but not central)
- The most correlated topics relates themes associated to the Israeli–Palestinian conflict

Conclusions

- Speeches around Holocaust Remembrance Day have a recurring pattern, punctuated by institutional moments
- Hate speeches are traditionally linked to the memory of the events and the Jews' historical persecution
- Recent events in the Israeli-Palestinian conflict have given rise to new semantic domains, some of which emerge as forms of hatred reversed and spilled over from Israel to Jews

Future developments

- Analyze the variation before and after of network participation (e.g. are the new nodes "different" from the previous ones)
- Conduct longitudinal analysis and incorporate covariates in STM models
- Apply this analytical approach to different episodes of online racism and xenophobia

Main References

- Bjola, C., & Manor, I. (2020). Combating Online Hate Speech and Anti-Semitism.
- Clauset, A., Newman, M. E., & Moore, C. (2004). Finding community structure in very large networks. Physical Review E—Statistical, Nonlinear, and Soft Matter Physics, 70(6), 066111.
- de la Fuente, O.P., Tsesis, A., & Skrzypczak, J. (Eds.). (2023). Minorities, Free Speech and the Internet. Taylor Francis
- Fonseca, A., Pontes, C., Moro, S., Batista, F., Ribeiro, R., Guerra, R., & Silva, C. (2024). Analyzing hate speech dynamics on Twitter/X: insights from conversational data and the impact of user interaction patterns. Heliyon
- Hidayati, H., Aflina, A., Arifuddin, A. (2021). Hate Speech on Social Media: A Pragmatic Approach. KnE Social Sciences, 308-317
- Himelboim, I., Smith, M. A., Rainie, L., Shneiderman, B., Espina, C. (2017). Classifying Twitter topic-networks using social network analysis. Social media+ society, 3(1), 2056305117691545
- Pontes, C., Fonseca, A., Moro, S., Batista, F., Ribeiro, R., Marques, C., & Guerra, R. (2024, July). Unveiling Patterns of Hate Speech in the Portuguese Sphere: A Social Network Analysis Approach. In International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems (pp. 70-81). Cham: Springer Nature Switzerland.
- Rawat, A., Kumar, S., & Samant, S. S. (2024). Hate speech detection in social media: Techniques, recent trends, and future challenges. Wiley Interdisciplinary Reviews: Computational Statistics, 16(2), e1648
- Roberts, M. E., Stewart, B. M., & Tingley, D. (2019). Stm: An R package for structural topic models. Journal of statistical software, 91, 1-40.
- Siege, A.A. Online hate speech, in: Social Media and Democracy: the State of the Field, Prospects for Reform, 2020, pp. 56–88
- Vandebosch, H., Rothmund, T. (2024). Online hate: A European communication perspective. Communications, 49(3), 371-377

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Thanks for your attention!

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