

MAPPING COVID-19 DISINFORMATION ECOSYSTEM IN CROATIA

dr.sc. MATO
BRAUTOVIĆ

REPORT

Author

Mato Brautović
University of Dubrovnik

Graphic designer

Sven Sorić

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Pro-fact

Research, education, fact-check and
debunk COVID-19 related disinforma-
tion narratives in Croatia

Coordinator of the Pro-Fact

Gong

Partners

Faculty of Political Science in Zagreb,
University of Dubrovnik, Faculty of Ele-
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Faktograf.hr.

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SUMMARY

This report is part of the research activities conducted under the project “Pro-fact: Research, education, fact-check and debunk Covid-19 related disinformation narratives in Croatia”, financed by EU grants for small-scale online media. The aim was to identify local (Croatian) sources of disinformation (websites, blogs, social media groups, media outlets, opinion makers and well known conspiracy theorists) related to Covid-19 pandemic, and to explore the reach and size of audiences of identified local disinformation sources.

Key findings:

Determined presence of topical Covid-19 disinformation ecosystem that consists of 18 clusters and supranational in nature covering Croatia and neighboring countries

Identified central and highly interconnected clusters formed around alternative media and influencers that developed into strong communities capable to spread disinformation quickly

Found limited influence of cluster formed around the only Croatian fact-checking organization Faktograf.

Detected two different types of purveyors of Covid-19 disinformation in SEE: influencers and super-spreaders with a small number of overlaps

Determined that Covid-19 information ecosystem differed from disinformation ecosystem in structure and organization (national in nature, polarized multi clusters on state level with presence of government, religious and dis(information) clusters)

Identified that Croatian dis(information) cluster was formed from purveyors of Covid-19 disinformation and mainstream media

INTRODUCTION

From the beginning of our civilization, disinformation was threatening the individuals, political systems, economies and societies. Today we can speculate that we are facing the greatest amount of disinformation ever (Watson, 2022). In fact, the crisis around the Covid-19 created an environment for disinformation acceptance and enabled purveyors of disinformation to use social media and internet-based technologies for dissemination and amplification of the disinformation narratives and discourses.

This study is trying to address the Covid-19 disinformation spreading in Southeast Europe (Croatia) as the phenomenon which is under researched and without a Croatian focus. The research conducted by Cvjetićanin et al. (2019) found that more than 60% of analyzed false or misleading media content in Bosnia and Herzegovina was political. Also, they found that their disinformation ecosystem consisted of two types of purveyors of disinformation: opportunistic and political actors. The opportunistic actors were sharing disinformation for financial gain, and political actors were using mainstream media for spreading disinformation to advance their political agenda. Cvjetićanin et al. (2019, p. 8) found that “...high number of media from neighboring countries...with BiH-based media outlets, using each other as sources and redistributors of disinformation...formed a large disinformation “hub”, used by local and possibly foreign political actors to influence public opinion in BiH and the region with considerable regularity and frequency.”

These findings were confirmed with results from the structural evaluation of the global Covid-19 disinformation network that detected the presence of distinct language communities, among others, in interrelated South-Slavic languages (Serbian, Croatian, Bosnian, Slovenian) but without further elaboration (Burns et al., 2020, p. 25).

Similar to previous studies, Green et al. (2021, p.6) claimed that most dominant purveyors of Covid-19 disinformation in SEE were domestic actors, while the presence of foreign actors were limited and they all aimed “to undermine the credibility of the European Union in the Western Balkans”.

“The Covid-19 pandemic has provided fertile ground for disinformation. Governments throughout the Western Balkans have sought to falsify their record on handling the pandemic, while others have injected many of the same false claims found elsewhere. In addition, China and, to a lesser extent, Russia, have used the pandemic as an opportunity to build leverage in public opinion, at the expense of the EU.” (Green et al., 2021, p.6)

Drawing on these findings, we developed the following research questions:

RQ1: Who are the online purveyors of Covid-19 disinformation in Croatia (users, accounts, pages and websites)?

RQ2: If the Covid-19 disinformation ecosystem has formed in Croatia, what kind of structure does it have and how does that structure amplify the transcendence of disinformation?

RQ3: How does the online Covid-19 disinformation ecosystem differ from the general Covid-19 information ecosystem?

For the purpose of this report, we used the term disinformation, which is defined as verifiably false, or misleading information, that was created and/or disseminated and may cause harm.

METHODOLOGY

For this study, we used a mixture of methods to retrieve and analyze two samples of data: Content Analysis, Social Network Analysis, and Visual Network Analysis. These methods were used to study the networks of URL exchanges that allowed us to map “...communities of pages, groups, and profiles that promoted similar content” (Bruns et al., 2020, p. 15). In terms of the network of URLs, the vertex (node) represents the page, group, or profile, while the edge (links) represents the relationships or interactions that connect them.

The first dataset was collected using the snowball method from the collection of URLs found on Faktograf’s blog about Covid-19 disinformation. A total of 540 fact check URLs (N=540) were collected for disinformation published from January 1, 2020 to December 31, 2021. Based on this URL list, manual content analysis was performed and the original (still active) 253 disinformation URLs (N=253, 47%) were identified. We then used CrowdTangle to collect Facebook data on URLs leading to fact checks and disinformation. The result was a dataset with 5128 edges (N=5128) and unique 1528 vertices (N=1528).

The second dataset was collected using CrowdTangle to retrieve public Facebook posts with the query (kovid, koronavirus, coronavirus, covid-19, and covid19) in Croatian, Serbian, Bosnian, Macedonian, Slovenian, and Montenegrin posted from January 1, 2020 to December 31, 2021. The dataset was then reduced to posts with links (79% of all collected posts contained links) that had 10 or more shares to reduce the sample for analysis. In the

end, the analyzed sample had 23081 edges (N=23081) and unique 5640 vertices (N=5640).

Social network analysis and visual network analysis were performed for both datasets and for this purpose we used NodeXL software. The visualization was created using the Harel-Koren Fast Multiscale algorithm¹, clusters were colored with different colors and connections (shared URLs) were colored from orange to purple depending on the weight of the relationship (number of shared URLs). The size of the vertex was scaled based on the betweenness centrality measure (measure of the vertex's influence in spreading information on social networks), and only the most influential vertices (the top 30 vertices) were given labels. Since the same sources (organizations or individuals) usually have multiple sources such as websites, Facebook pages, and similar web domains, we used the same names/labels to reduce them to the same source whenever it was possible to determine. For example, Faktograf had both a website and a Facebook page, which were referred to as Faktograf and used as a single cornerstone. In cases where it was difficult to determine the relationship between the outlets, we left them as they were. For example, in the case of the Matrix Facebook page and the Matrix YouTube channel, it was impossible to establish the connection.

RESULTS

The overview of network structure coming from the first dataset showed that Covid-19 disinformation ecosystems consists of 18 interconnected clusters through which dominate three major clusters (G2, G3, and G4), whose members were different pages, groups and verified profiles, extending beyond Facebook borders to YouTube and different alternative and mainstream media websites. The ecosystem had supranational nature (covered the whole SEE region and beyond) by covering whole Balkans (Bruns et al., 2020) with dominance of Serbian sources. These Covid-19 disinformation clusters had community characteristics, in the center of which were alternative media (G2 - 2012 Transformacija svijesti² & G4 – logicno.com³), or influential individuals (G3 – Marija Stojaković⁴). Other clusters have broad-

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- 1 Algorithm used for visualization of SNA that forces closely connected vertices to be plotted near.
 - 2 2012 Transformacija svijesti is an alternative medium with Facebook page that follows 200.000 people and has highest reach in SEE (Zablocki, 2020).
 - 3 Logicno.com is a pro Russian alternative medium register in Bosnia and Herzegovina (Marković, 2022).
 - 4 Marija Stojaković is disinformation blogger from Serbia whose content is regularly debunked by regional fact checkers (Perić, 2020).

casting (star-shaped) distribution with individuals (G1 – Marina Brekalo⁵) or organizations (G5 - Faktograf, G6 - V1 Info⁶, G7 - RamsesThePigeon⁷, G8 - Alfa & Omega⁸, G9 Pravo na slobodu⁹ & G10 - Suverenisti¹⁰) in the center. In these clusters communities were partially formed and vertices have minimal interaction between themselves.

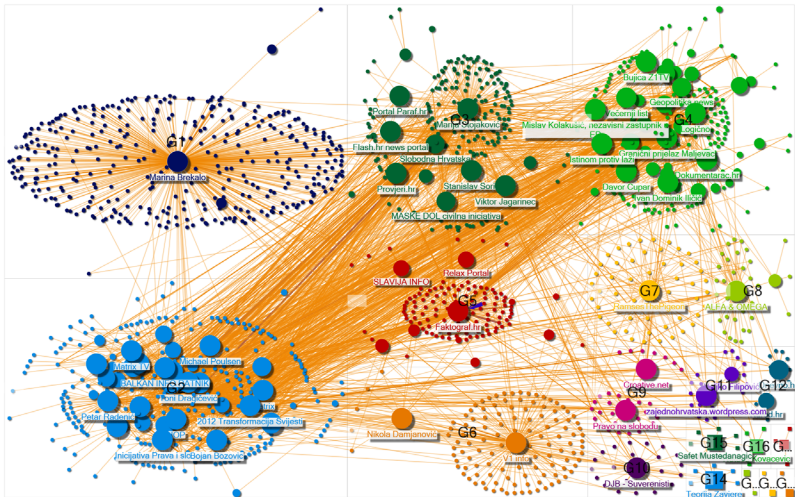


Figure 1: Social network analysis of Covid-19 disinformation ecosystem

Analysis of the clusters shows that clusters G2, G3 and G4 were highly interconnected, while others were at the edges of the disinformation ecosystem. These clusters had a tight crowd format and were characterized with a diversity of opinions around Covid-19, but relied on similar sources of information. Also, all clusters have small average geodesic distance¹¹ what can be

- 5 Marina Brekalo is a member of the Croatian diaspora in Austria that has a Facebook profile whose post with video about protest against Covid-19 measures in Vienna became viral <https://www.facebook.com/707628162708190/posts/2456910027779986>.
- 6 V1 info is Facebook page from Sremska Mitrovica in Serbia.
- 7 RamsesThePigeon is Youtube channel.
- 8 Alfa & Omega is Catholic Facebook group with 25.000 followers.
- 9 Pravonaslobodu.com is an alternative medium from Serbia with Facebook page that follows 103.000 people.
- 10 DJB (Dosta je bilo) Suverenisti is Facebook page of political organization from Serbia with 139.000 followers.
- 11 The average geodesic distance represents the shortest path between two vertices in the cluster. The average online geodesic distance is 6,41 (Franceschet, 2022) and

interpreted as they represent the spaces where disinformation can spread fast (Franceschet, 2022)

Cluster G5, which was formed around only the Croatian fact-checking organization Faktograf, had a broadcasting structure where many vertices repeated Faktograf's content as a form of criticism of their work. Although the analyzed data set was heavily skewed on the side of Faktograf, the analysis revealed that almost 62% (N=546) of all edges in G5 cluster were self-loops or Faktograf's Facebook page sharing links to Faktograf's website (Tabel 1).

Table 1: Top 10 clusters statistics

Cluster	Vertices	Unique Edges	Edges With Duplicates	Total Edges	Self-Loops	Average Geodesic Distance ¹²	Graph Density ¹³
G1	365	321	131	452	2	2,011	0,003
G2	293	523	499	1022	29	3,155	0,008
G3	202	224	133	357	4	2,852	0,007
G4	199	283	181	464	19	3,471	0,008
G5	124	104	776	880	546	2,317	0,008
G6	122	108	47	155	0	2,162	0,008
G7	54	52	2	54	0	1,927	0,019
G8	36	35	0	35	0	2,219	0,028
G9	35	29	14	43	4	2,511	0,029
G10	23	20	4	24	0	1,830	0,043



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The detailed visualization (ego-network including friends of the friends) of the clusters G5 and G2 (Figure 2) further confirmed the characteristics of these clusters, where G5 had broadcast structure, and G2 had community structure. Broadcast structure means that communication is one-way oriented from center to periphery of the cluster, and community structure means that members of the cluster have certain interests in common and they are interconnected.

in case of purveyors of Covid-19 disinformation in SEE it is in the range from 1,830 to 3,471.

12 The average shortest path between two vertices in the network.

13 The proportion between the number of the edges in a cluster or network and the maximum number of edges that cluster or network theoretically can have. The more edges the cluster or network have, the graph density is lower.



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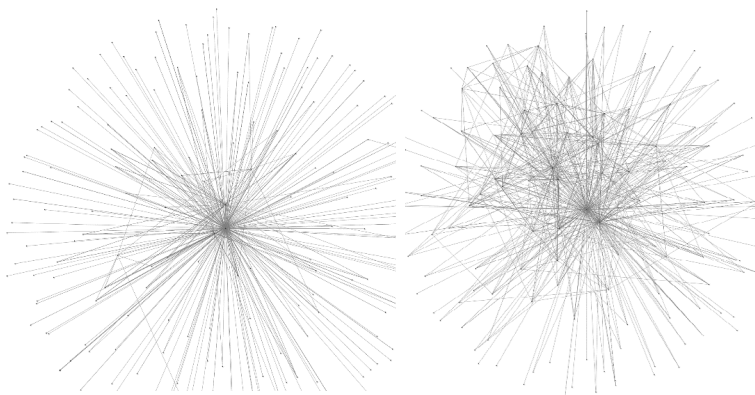


Figure 2: Difference between community and broadcast clusters

Based on SNA metrics we identified two distinguished groups of purveyors: the influential vertices and super-spreaders. The influential vertices were pages/groups/profiles whose content (URLs) was most shared, and super-spreaders were vertices who were sharing others' content the most often. The super-spreaders were sharing links to alternative media, mainstream media and individuals, but this communication was mainly one-way and was in function of sharing (confirming) their narratives and discourses. As Table 1 shows, only rare vertice (2012 Transformacija Svijesti) were present in the both lists. The list of the most influential vertices dominates with individuals (Marina Brekalo, Marija Stojaković, Bojan Bozović, Petar radenić, Toni Dragičević, Davor Cupar), and alternative media (V1 info, Logično, 2012 Transformacija Svijesti, Istinom protiv laži, HOP portal, Fash.hr), while super-spreaders were mainly Facebook groups and pages linked to anti-system parties/politicians (Narodni Referendum, Glavna grupa stranke Ivana Pernara, Grupa podrške Ivana Pernara, Hoćemo Mislava Kolakušića kao ministra pravosuđa i policije!, Grupa potpore Karolini Vidović Krišto), and conspiracy theories (Saznajmo istinu o Koroni, Istina.info.nova, Borba Protiv Okupacije, Krešimir Mišak-Na Rubu Znanosti, Promijenite Svoju Svijest).

Table 2: Top 20 the most influential and super-spreaders pages, groups and verified users

The most influential (in-degree)	Super-spreaders (out-degree)
1. Marina Brekalo	1. Narodni Referendum
2. Marija Stojaković	2. Saznajmo istinu o Koroni
3. Faktograf.hr ¹⁴	3. Glavna grupa stranke Ivana Pernara
4. V1 info	4. Istina.info.nova
5. Logično	5. Grupa podrške Ivana Pernara
6. 2012 Transformacija Svijesti	6. Borba Protiv Okupacije
7. Bojan Bozovic	7. Poštovaoci lika i djela dr Branimira Nestorovića
8. Petar Radenić	8. FORUM
9. Istinom protiv laži	9. Hoćemo Mislava Kolakušića kao ministra pravosuđa i policije!
10. Flash.hr news portal	10. 2012 Transformacija Svijesti
11. Matrix	11. Krešimir Mišak-Na Rubu Znanosti
12. Inicijativa Prava i slobode	12. NAJBOLJA HRVATSKA
13. ALFA & OMEGA	13. Vučić te laže ne veruj šta ti kaže
14. RamsesThePigeon	14. NEĆU DA NAM OPANČARI I DIJASPORA KROJE SUDBINU U DOMOVINI
15. Michael Poulsen	15. Promijenite Svoju Svijest
16. HOP portal	16. Руске вести
17. BALKAN INFO RATNIK	17. Grupa potpore Karolini Vidović Krišto
18. Toni Dragičević	18. POTPORA HRVATSKOM NOVINARU MARKU JURICHU
19. Matrix TV	19. Српско-руско братство - духовно и историјско
20. Davor Cupar	20. CORONA-NE BOJTE SE CORONE KORUMPIRANI POLITIČARI SU OPASNI PO ČOVJEKA



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Opposite to the first dataset, the findings showed presence of community clusters which were formed around several hubs that have different audiences and sources of information (Smith et al., 2014). As visualized in Figure 3, the community clusters about Covid-19 were formed on the national (Serbian, Croatian, Slovenian, Bosnian, et.) level. Also, on the Croatian national level we detected the presence of polarized clusters formed around official Covid-19 sources (government), religion (Catholics) and (dis)information (mainstream media, alternative media, purveyors of Covid-19 disinformation, etc.). The polarized crowd structure means that two opposite groups almost do not interact with each other, that they share different sources (URLs) and use different hashtags and words (Smith et al., 2014). The clusters formed around official sources were smaller in size, more dense and with shortest cascading.

14 It should be noted that Faktograf.hr was part of the ecosystem but NOT a purveyor of Covid-19 disinformation.



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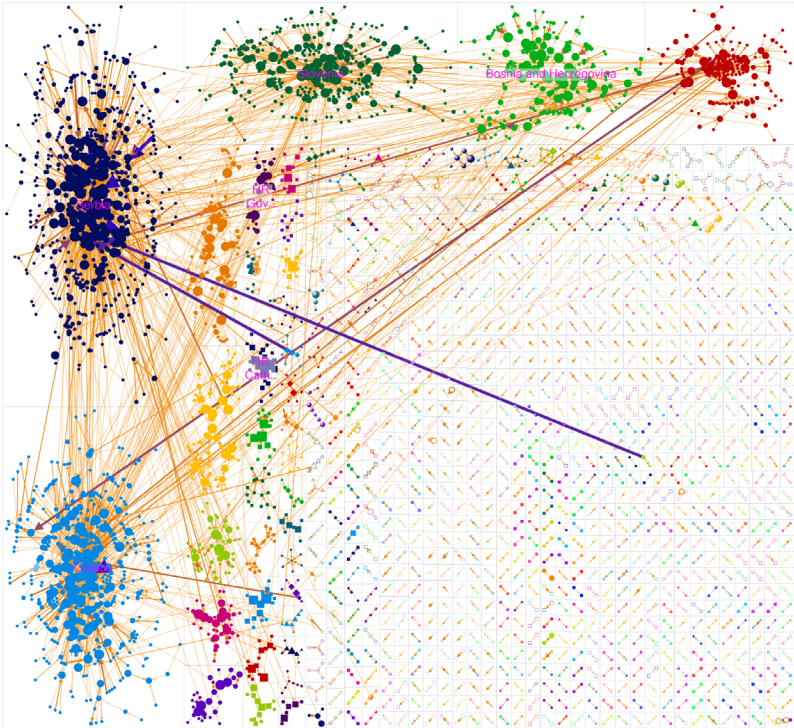


Figure 3: Social network analysis of Covid-19 information ecosystem

The members of the (dis)information cluster were well known purveyors of Covid-19 disinformation (2012 Transformacija svijesti, Grupa podrške sucu Mislavu Kolakušiću, Logicno.com, flash.hr, Glavna grupa stranke Ivana Pernara, Narodni Referendum, and Grupa potpore Karolini Vidović Krišto), and mainstream media (jutarnji.hr, 24sata.hr, index.hr, slobodnadalmacija.hr, vecernji.hr, hr.n1info.com, tportal.hr, rtl.hr, and etc.). The members of the government cluster were the Croatian Government, Croatian Institute for Public Health, Ministry of Science and Education, Prime Minister Andrej Plenković, Croatian Society for Infectious Diseases of Croatian Medical Association, and etc. The Croatian Catholic cluster consisted of the Croatian Catholic Network, Croatian Catholic News Agency, Laudato TV, Croatian Bishop Association, Book.hr, and etc.

Table 3: Croatian major clusters discussing Covid-19 ranked by betweenness centrality

(Dis)information	Government	Dominant religion
1. 2012 Transformacija Svijesti	1. hzjz.hr	1. hkm.hr
2. jutarnji.hr	2. Ravnateljstvo civilne zaštite MUP RH	2. ika.hkm.hr
3. 24sata.hr	3. koronavirus.hr	3. Kuća susreta Tabor
4. Grupa podrške sucu Mislavu Kolakušiću	4. vlada.gov.hr	4. Riječka nadbiskupija
5. Gordan Lauc	5. Cijepljenje-pravo izbora	5. Ivan Dominik Iličić
6. index.hr	6. civilna-zastita.gov.hr	6. laudato.hr
7. logicno.com	7. mjera-orm.hzz.hr	7. glas-koncila.hr
8. Udruga Glas poduzetnika	8. poljoprivreda.gov.hr	8. Hrvatski katolički radio
9. slobodnadalmacija.hr	9. Petar Škorić	9. hbk.hr
10. vecernji.hr	10. cijepljenje.info	10. zg-nadbiskupija.hr
11. Koronavirus Hrvatska-COVID19-savjeti i informacije	11. eudigitalnacovidpotvrda.hr	11. O Isuse ljubavi moja
12. flash.hr	12. hdib.hr	12. book.hr
13. nacional.hr	13. mzo.gov.hr	13. laudato.tv
14. Glavna grupa stranke Ivana Pernara	14. shu.hr	14. Fra Mario Knezović
15. Narodni Referendum	15. Andrej Plenković	15. Internet Radio Božje Milosrđe
16. Grupa potpore Karolini Vidović Krišto	16. CroStuttgart	16. Karmelićani-Split
17. hr.n1info.com	17. Grad Kastav	17. Kršćanska sadašnjost
18. tportal.hr	18. Grad Varaždin	18. Stjepan Ivan Horvat
19. Saznajmo istinu o Koroni	19. Hrvati u Dijaspori	19. Veritas-Glasnik sv. Antuna Padovanskoga
20. rtl.hr	20. Koronavirus na području grada Čabra	20. Župa Bošnjaci



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The Croatian (dis)information cluster was 17 times larger than the government cluster and had 75,6 times more edges (shares) than the government one (Table 4).

Table 4: Croatian clusters statistics

Cluster	Vertices	Unique Edges	Edges With Duplicates	Total Edges	Self-Loops	Average Geodesic Distance	Graph Density
(Dis) information	582	711	3970	4681	98	4,354	0,003
Government	33	25	37	62	0	4,496	0,030
Catholics	25	19	57	76	0	3,533	0,042



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CONCLUSION

Purveyors of Covid-19 disinformation formed supranational disinformation ecosystems consisting of different social media pages, channels, groups, and profiles, including alternative and mainstream media websites originating beyond Croatian national border to the rest of the SEE region. In the center of the SEE disinformation ecosystem were few highly interconnected community clusters, which represented the spaces where disinformation can spread quickly, formed around alternative media hubs (2012 Transformacija svijesti, Logicno.com) and blogger (influencer) (Marija Stojaković). On other hand, the cluster formed around Croatian fact-checking organization Faktograf had a broadcasting structure with a high number of edges as self-loops or results of back-fire effect.

Detail analysis revealed that the majority of vertices fit into two distinguished groups of purveyors: the influential vertices and super-spreaders where the first group creates content and second shares links to alternative media, mainstream media, and individuals.

Opposite to the disinformation ecosystem, the findings about general discussions on Covid-19 showed presence of communities on national level with different audiences and sources of information (Serbian, Croatian, Slovenian, Bosnian, etc.). Detailed analysis of Croatian linking practices detected the presence of polarized clusters formed around official Covid-19 sources (government), religion (Catholics) and (dis)information (mainstream media, alternative media, purveyors of Covid-19 disinformation, etc.) sources.

Based on these findings we can conclude that purveyors of Covid-19 disinformation in SEE use social media and the internet more effectively for distribution and amplification of their narratives and discourses than the government. Also, to fully understand the phenomenon, the research has to be extended to the role of mainstream media in spreading disinformation in particular use of clickbait headlines, error correction practices, fact-checking routines and practices, etc.

LIMITATIONS

The data collected using CrowdTangle data comes only from public posts published on pages, public groups and verified profiles and represents up to 2% of all the posts published on the topic (Donovan, 2020). Also, the data collected for the purveyors of Covid-19 disinformation is limited only to actors/content available at the time of the research (December 2021).

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ABOUT THE AUTHOR

Mato Brautović is a professor at the Department of Mass Communication at the University of Dubrovnik. He is an author and co-author of many books, book chapters, and scientific papers in professional journals in the field of his expertise – media and war, journalism, internet history, online disinformation, digital methods, and social media. Professor Brautovic has a long and rich experience with scraping, cleaning and analyzing big data, going back to 2006, when he conducted his first social network analysis (SNA).

PRO-FACT

The Project ‘Pro-fact: Research, education, fact-check and debunk COVID-19 related disinformation narratives in Croatia’ is tackling disinformation related to COVID-19 on multiple levels by a multidisciplinary and intersectoral approach. Through research, awareness raising, and capacity-building methods, the project comprehensively approaches the social, political, and health problem of spreading disinformation campaigns related to COVID-19. Through its activities, it aims to effectively expose COVID-19 related disinformation campaigns in Croatia, strengthen the Croatian multidisciplinary team capacities for detecting and combatting disinformation campaigns, and to increase media literacy competencies of Croatia journalists and the general public.

The coordinator of the project is Gong, while the partner organisations are: Faculty of Political Science in Zagreb, University of Dubrovnik, Faculty of Electrical Engineering and Computing and Faktograf.hr.

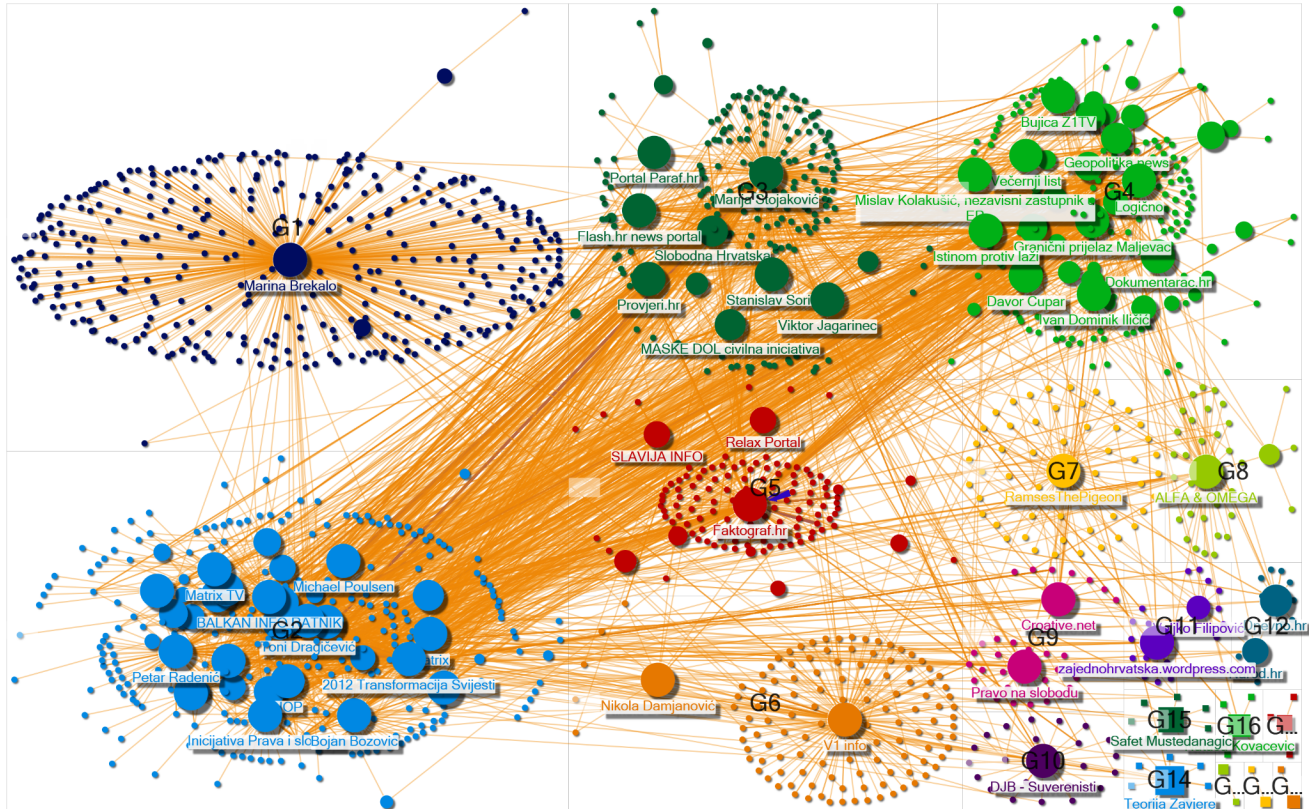
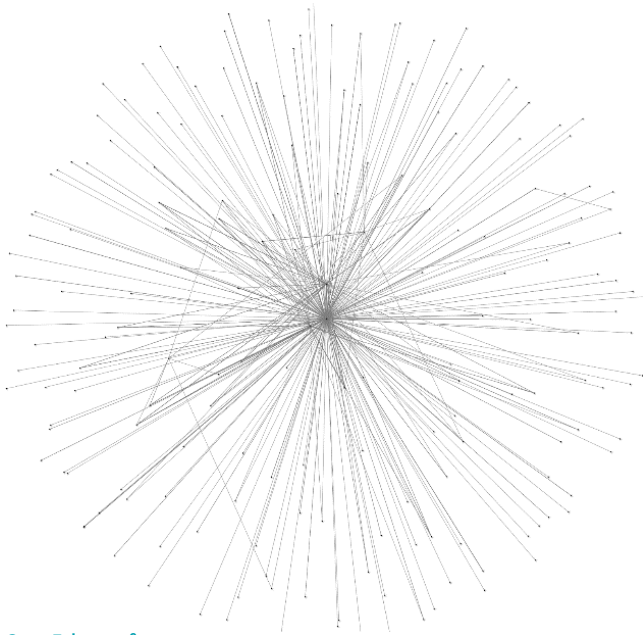


Figure 1: Social network analysis of Covid-19 disinformation ecosystem

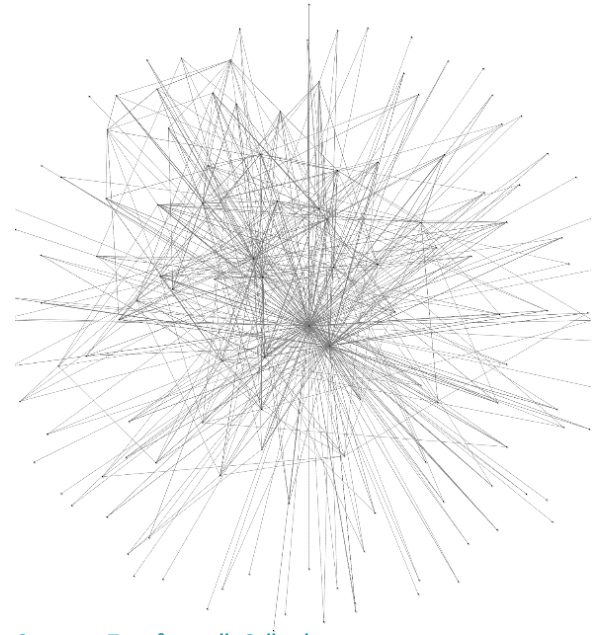
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- 1 The average shortest path between two vertices in the network.
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G5 – Faktograf



G2 – 2012 Transformacija Svijesti

Figure 2: Difference between community and broadcast clusters



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The most influential (in-degree)	Super-spreaders (out-degree)
1. Marina Brekalo	1. Narodni Referendum
2. Marija Stojaković	2. Saznajmo istinu o Koroni
3. Faktograf.hr ¹	3. Glavna grupa stranke Ivana Pernara
4. V1 info	4. Istina.info.nova
5. Logično	5. Grupa podrške Ivana Pernara
6. 2012 Transformacija Svijesti	6. Borba Protiv Okupacije
7. Bojan Bozovic	7. Poštovaoci lika i djela dr Branimira Nestorovića
8. Petar Radenić	8. FORUM
9. Istinom protiv laži	9. Hoćemo Mislava Kolakušića kao ministra pravosuđa i policije!
10. Flash.hr news portal	10. 2012 Transformacija Svijesti
11. Matrix	11. Krešimir Mišak-Na Rubu Znanosti
12. Inicijativa Prava i slobode	12. NAJBOLJA HRVATSKA
13. ALFA & OMEGA	13. Vučić te laže ne veruj šta ti kaže
14. RamsesThePigeon	14. NEĆU DA NAM OPANČARI I DIJASPORA KROJE SUDBINU U DOMOVINI
15. Michael Poulsen	15. Promijenite Svoju Svijest
16. HOP portal	16. Руске вести
17. BALKAN INFO RATNIK	17. Grupa potpore Karolini Vidović Krišto
18. Toni Dragičević	18. POTPORA HRVATSKOM NOVINARU MARKU JURIČU
19. Matrix TV	19. Српско-руско братство - духовно и историјско
20. Davor Cupar	20. CORONA-NE BOJTE SE CORONE KORUMPIRANI POLITIČARI SU OPASNI PO ČOVJEKA

Table 2: Top 20 the most influential and super-spreaders pages, groups and verified users

1 It should be noted that Faktograf.hr was part of the ecosystem but NOT a purveyor of Covid-19 disinformation.

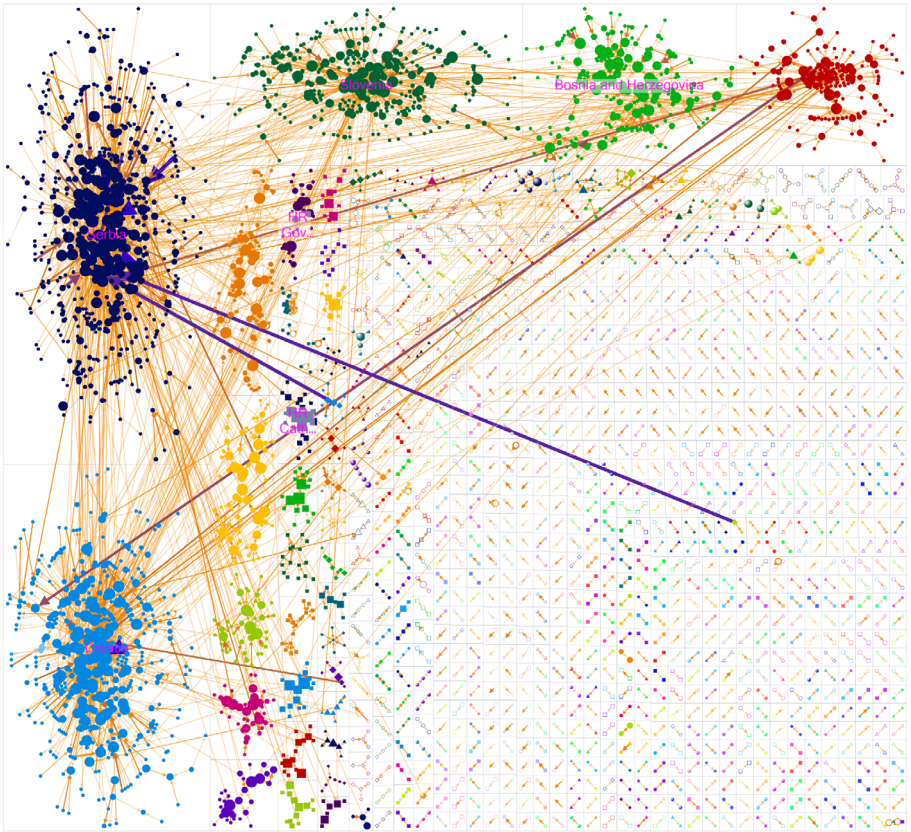


Figure 3: Social network analysis of Covid-19 information ecosystem



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(Dis)information	Government	Dominant religion
1. 2012 Transformacija Svijesti	1. hzjz.hr	1. hkm.hr
2. jutarnji.hr	2. Ravnateljstvo civilne zaštite MUP RH	2. ika.hkm.hr
3. 24sata.hr	3. koronavirus.hr	3. Kuća susreta Tabor
4. Grupa podrške sucu Mislavu Kolakušiću	4. vlada.gov.hr	4. Riječka nadbiskupija
5. Gordan Lauc	5. Cijepljenje-pravo izbora	5. Ivan Dominik Iličić
6. index.hr	6. civilna-zastita.gov.hr	6. laudato.hr
7. logicno.com	7. mjera-orm.hzz.hr	7. glas-koncila.hr
8. Udruga Glas poduzetnika	8. poljoprivreda.gov.hr	8. Hrvatski katolički radio
9. slobodnadalmacija.hr	9. Petar Škorić	9. hbk.hr
10. vecernji.hr	10. cijepjenje.info	10. zg-nadbiskupija.hr
11. Koronavirus Hrvatska-COVID19-savjeti i informacije	11. eudigitalnacovidpotvrda.hr	11. O Isuse ljubavi moja
12. flash.hr	12. hdib.hr	12. book.hr
13. nacional.hr	13. mzo.gov.hr	13. laudato.tv
14. Glavna grupa stranke Ivana Pernara	14. shu.hr	14. Fra Mario Knezović
15. Narodni Referendum	15. Andrej Plenković	15. Internet Radio Božje Milosrđe
16. Grupa potpore Karolini Vidović Krišto	16. CroStuttgart	16. Karmelićani-Split
17. hr.n1info.com	17. Grad Kastav	17. Kršćanska sadašnjost
18. tportal.hr	18. Grad Varaždin	18. Stjepan Ivan Horvat
19. Saznajmo istinu o Koroni	19. Hrvati u Dijaspori	19. Veritas-Glasnik sv. Antuna Padovanskoga
20. rtl.hr	20. Koronavirus na području grada Čabra	20. Župa Bošnjaci

Table 3: Croatian major clusters discussing Covid-19 ranked by betweenness centrality



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Cluster	Vertices	Unique Edges	Edges With Duplicates	Total Edges	Self-Loops	Average Geodesic Distance	Graph Density
(Dis) information	582	711	3970	4681	98	4,354	0,003
Government	33	25	37	62	0	4,496	0,030
Catholics	25	19	57	76	0	3,533	0,042

Table 4: Croatian clusters statistics

