
COVID-19 Recovery:
Building Future Pandemic
Preparedness and
Understanding Citizen
Engagement in the G7

Fighting Fake News: Online Disinformation in Covid Times

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About COVID-19 Recovery: Building Future Pandemic Preparedness and Understanding Citizen Engagement in the G7

The programme aims to facilitate global and interconnected learning about the contexts, causes and factors leading to vaccine engagement. Through the programme, the Academy has awarded funding to seven research projects exploring vaccine engagement in Canada, France, Germany, Italy, Japan and the UK. The programme, which was funded by the UK's Department for Business, Energy and Industrial Strategy, builds on a series of statements developed in partnership with humanities and social sciences bodies across G7 countries. The Academy has supported another series of projects focused on the USA and UK.

Contents

1.0	Executive summary	4
2.0	Project overview	6
2.1	Motivation	6
2.2	Project objectives and approach	7
2.3	Research team	8
2.4	Methodology and data collection	8
2.5	Summary of the results	9
3.0	Main conclusions from the case studies	11
3.1	A legal and cultural analysis of the context	11
3.2	Quantitative analysis	12
3.3	Country case study I: France and Les_Vaxxeuses	15
3.4	Country case study II: Italy and IoVaccino	17
3.5	Country case study III: Ireland and the HPV vaccine	18
4.0	Policy recommendations	20
4.1	The construction of systems of trust in health issues such as COVID-19 and the need to increase vaccination rates amongst the population	20
4.2	The construction of governance frameworks in online digital platforms in relation to disinformation online and the so-called fake news	21
5.0	Next steps and future research	23
	References	25
	About the Academy	26

1.0 Executive summary

- In this research we study the problem of vaccine hesitancy in relation to COVID-19 in France and Italy and then contrast this with the HPV vaccination discourse in Ireland. We focus on the online engagement processes between the individuals and organisations in favour of vaccines, and those against.
- We approach this issue through three different research methodologies.
 - First, we analyse online engagements, tweeted in English, at global level. We analyse the colloquially called ‘pro-vax’ and ‘anti-vax’ discourses and its users (which may be individuals or organisations), their characteristics, forms of engagement, and the emotionality of their discourses.
 - Second, we focus on the emotional work through which pro-vax social media activists engage with vaccine hesitant to combat disinformation. We selected publicly recognised organisations in each of the countries analysed: Les Vaxxeuses in France and IoVaccino in Italy. We compare these organisations’ engagement processes to a successful case in Ireland concerning the HPV vaccination.
 - Third, we complement the study of online engagement with an analysis of its legal and social context; this is mainly in Italy and France but also encompasses the EU.
- Our findings reveal that despite the ideological polarisation, anti-vax and pro-vax actors often engage with each other in social media platforms.
 - Anti-vax actors can be seen mainly as individuals who criticize institutional policies on vaccination because of the restrictions they inflict on their freedom and on society. They also associate vaccines with poison. These individuals are typically open about their offline identities.
 - Pro-vax actors, on the other hand, have a common goal to denounce anti-vax users. The sentiment of their engagement is negative overall. Pro-vax users tend to protect their integrity as individuals by interacting anonymously under the umbrella of pro-vax organisations.
 - The analysis of groups, topics, and forms of engagement shows that pro-vax organisations tend to explicitly state counteracting anti-vax discourses as their objective.
 - However, we show that they have limited capacity to engage constructively. We argue that this limitation relates to:
 - a lack of emotional regulation when they are engaging with users who are operating in a very different normative framework, and;
 - their adoption of a position of moral superiority that does not allow them to empathise with opposing normative frameworks.

- The Irish case on HPV vaccines shows how social activists can create constructive engagement online, and as a result, increase vaccination rates.
- We claim that the Irish case success was due to the capacity of activists to emotionally engage with vaccine hesitant individuals and convert their negative emotional energy into positive energy that promotes action for change.
- As policy recommendations we emphasise the importance of offering institutional support to social activists (in our case, the independent pro-vax groups). We assert that institutional support should be delivered in relation to two policy areas:
 - First, the construction of systems of trust in health care. We recommend the creation of partnerships to support social activism in the following areas: technical support, legitimacy support, emotional support, and support in creating effective communication and engagement online with a view to create inclusive discourses about the pandemic.
 - Second, the construction of governance frameworks in online digital platforms in relation to disinformation online and so-called ‘fake news’. We recommend reinforcing the development of an EU-level framework of governance that works with digital platforms to reduce misinformation. Also, we suggest collaboration with the digital platforms to protect social activists through the creation of a safety and security mechanism, and systems and training targeted at improving the effectiveness of such mechanisms.
- More generally, this study relates to the creation of trust systems within society in relation to grand challenges such as the COVID-19 pandemic. We highlight the importance of understanding and working on emotions in the collective construction of the systems of trust.
- We also argue for the importance of working with social activists (groups or individuals) on digital platforms to ensure a more plural and inclusive process of engagement.
- Finally, we acknowledge the importance of understanding the social media platforms as agonistic or polemical spaces, where emotions play an important role in diffusing new discourses. We suggest that the failure to address these emotional states risks increasing the polarisation in our society and destabilising democracy to a dangerous extent. We recommend more engagement in the ethics of care to overcome these dangers.

2.0 Project overview: motivation, objectives, methods and main results

2.1 Motivation

During COVID-19 mistrust towards Covid vaccines has grown in Europe. From being a minority social issues it has turned into a priority for public health institutions. In January 2021, a survey for Reuters London report 30% of the UK population as stating they distrusted the vaccines, and only 30% of the French population were willing to be vaccinated, one of the lowest rates in the world.¹ After a year-long campaign, vaccination rates are now stagnating in the USA and Europe.²

The vaccine hesitant have found in the social media platforms a space to share their ideas and engage with others, and to diffuse fake news and misinformation. Fake news represent a threat to institutions and their legitimacy.³ Contestation, use of hate speech, and polarisation increasingly characterise social media exchanges, as has been documented by previous accounts⁴ and the findings of this report: *OHCHR / Joint Open Letter on Concerns about the Global Increase in Hate Speech*, 2019. The increase in the violence of discourse and the reluctance to engage in constructive dialogue is greatly enlarging the problem of fake news, such that efforts to promote verified information are facing increasing challenges.

In a post-truth era dominated by social media exchanges, emotions prevail over rational and scientific arguments.⁵ Previous studies on the fight against fake news have focused on the 'engineering response'; this is based on tools and automation⁶ that improve understanding about the use of bots and the general trends on emotional content. Emotions are key to the functioning of social media⁷, but very few studies have investigated the role of emotions in the online engagements and more specifically how emotions can be employed to respond to fake news.

- 1 Kelland, K. (2021, January 15). Exclusive: International COVID-19 vaccine poll shows higher mistrust of Russia, China shots. Reuters. <https://www.reuters.com/article/us-health-coronavirus-vaccines-attitudes-idUSKBN29K16T>
- 2 Buchholz, K. (2021, November 22). Infographic: Stagnation & Progress in Global COVID-19 Vaccinations. Statista Infographics. <https://www.statista.com/chart/25914/timeline-of-coronavirus-vaccinations/>; WHO/Europe. (2021, August 30). Statement – WHO/Europe: Stagnating COVID-19 vaccination uptake requires urgent action. <https://www.euro.who.int/en/media-centre/sections/statements/2021/statement-who-europe-stagnating-covid-19-vaccination-uptake-requires-urgent-action>
- 3 Hahl, O., Kim, M., & Zuckerman Sivan, E. W. (2018). The Authentic Appeal of the Lying Demagogue: Proclaiming the Deeper Truth about Political Illegitimacy. *American Sociological Review*, 83(1), 1–33. <https://doi.org/10.1177/000312241774963>
- 4 Tyagi, A., Uyheng, J., & Carley, K. M. (2020). Affective Polarization in Online Climate Change Discourse on Twitter. 2020 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM), 443–447. <https://doi.org/10.1109/ASONAM49781.2020.9381419>; Horton, R. (2020). Offline: COVID-19 is not a pandemic. *The Lancet*, 396(10255), [https://doi.org/10.1016/S0140-6736\(20\)32000-6](https://doi.org/10.1016/S0140-6736(20)32000-6); Mendenhall, E. (2020). The Covid sindemic is not global: context matters. *the Lancet*, 396(10264), [https://doi.org/10.1016/S0140-6736\(20\)32218-2](https://doi.org/10.1016/S0140-6736(20)32218-2).
- 5 McIntyre, L. (2018). Post-truth. MIT Press.
- 6 Moravec, P., Minas, R., & Dennis, A. R. (2018). Fake News on Social Media: People Believe What They Want to Believe When it Makes No Sense at All (SSRN Scholarly Paper ID 3269541). Social Science Research Network. <https://doi.org/10.2139/ssrn.3269541>
- 7 Pollock, T. G., Lashley, K., Rindova, V. P., & Han, J. H. (2019). Which of these things are not like the others? Comparing the rational, emotional, and moral aspects of reputation, status, celebrity, and stigma. *Academy of Management Annals*, 13(2), 444–478. <http://doi.org/10.5465/annals.2017.0086>; Toubiana, M., & Zietsma, C. (2017). The message is on the wall? Emotions, social media and the dynamics of institutional complexity. *Academy of Management Journal*, 60(3), 922–953. <http://doi.org/10.5465/arnj.2014.0208>

In social media, social activists are key actors working in institutional maintenance and trust systems.⁸ They rely on emotion-symbolic work—the deliberate production and use of multimodal symbols to manage the emotions and emotional energy of actors—to reach out to their audience and gather support.⁹ While research on social activism and emotions has examined institutional disruption, little has been said about institutional maintenance after a dis-institutionalisation event caused by fake news. Context is important because the starting point for social entrepreneurs is very different from that of disruptive social entrepreneurs. Rather than being perceived as innovators willing to change the world, social entrepreneurs working on institutional maintenance to counteract fake news have to adopt the less comfortable position of dealing with people's negative emotions,¹⁰ and re-aligning them with a previous and potentially dismissed framework of understanding.

2.2 Project objectives and approach

The aim of this project is to study how to successfully counter anti-vaccination movements and fake news online in order to re-establish trust systems and increase vaccination rates. The findings could also be used to inform ongoing legislative proposals on the regulation of online harm (e.g., draft Online Safety Bill, currently at the UK Parliament) and initiatives at European Union level (e.g., Commission Action plan on disinformation; European Democracy Action Plan; Digital Services Act). More specifically, this report addresses the following questions:

- What are the main discourses leading to COVID-19 misinformation related to vaccination?;
- How are different online groups in the COVID-19 vaccination debate and how they engage to each other?;
- What emotional, symbolic, and communicational strategies are being used by pro-vax online groups in order to succeed against misinformation?;
- What are the social, political, and legal factors that create different responses and strategies in the different countries?; and
- What communication strategies should be developed by different health-care institutions to support the creation of trust systems to increase vaccination rates and reduce the negative social impacts of misinformation?

To answer these questions, this research developed an approach using the engagement on Twitter related to COVID-19 vaccination issues and three country case studies (France, Italy, and Ireland) in which we analyse the main discourses of the anti-vaccination movement and outline how a key organisation has fought or is currently fighting it. These cases are enriched and contextualised by describing the relevant legal and cultural context in which the discourses are produced, and by providing a general discourse analysis of the anti-vaccination positions.

8 Barberà-Tomás, D., Castello, I., de Bakker, F. G. A., & Zietsma, C. (2019). Energizing Through Visuals: How Social Entrepreneurs Use Emotion-Symbolic Work for Social Change. *Academy of Management Journal*, 62(6), 1789–1817

9 Barberà-Tomás et al., op cit. 2019

10 Gross, J. J. (2015). Emotion Regulation: Current Status and Future Prospects. *Psychological Inquiry*, 26(1), 1–26. <http://doi.org/10.1080/1047840X.2014.940781>

2.3 Research team

The research was conducted by a team of scholars from various social science academic backgrounds (Management, Law, Organisation Studies, Anthropology, Information Systems) and from different countries (UK, Italy, France). The team is formed by world experts in the analysis of symbolic discourses and emotions online. The study is thus enriched with a strong complementarity of competences and previous experience working on this topic, as well as a clear understanding of each of the cultural contexts studied.

2.4 Methodology and data collection

This research is informed by four main case studies, using a combination of quantitative and qualitative methodologies.

The first case is a general, mainly quantitative analysis oriented to evaluate trends in online engagement in the Twitter digital platform. It is composed of a semantic network analysis, engagement analysis, and sentiment analysis, founded on natural language processing methods. The period covered runs from when the vaccines programmes were first implemented in UK and Europe, up to December 2021.

The remaining three cases take the form of a netnography focusing on a specific European country. Each case is built on a rich set of data collected on- and off-line and utilises an inductive three-step approach for generating theory.¹¹ The focus of the analysis is on understanding the emotional and symbolic strategies and the communication strategies used by pro-vaccination groups. In each country, the cultural, social, political, and legal contexts are analysed based on secondary data, showing how they shape each anti-vaccination movement and the strategies of each focal organisation for responding to the anti-vaccination groups.

The country cases selected are: (i) 'Les Vaxxieuses', an online group fighting anti-vax positions on social networks in France; (ii) 'To Mi Faccio il vaccino contro il Covid', a similar group acting in Italy; and (iii) Laura Brennan and the HPV vaccination campaign in Ireland. The first two cases relate to the two most prominent Covid pro-vaccination civil society organisations/social media groups operating in Italy and France. We study their social media engagement strategies, as well as their forms of engagement with other stakeholders. The third case is not a Covid case but concerns Ireland's Human Papilloma Virus (HPV) vaccine campaign between the years 2015-20. We analyse how Laura Brennan and her family worked within social media to increase HPV vaccination rates by 40% from 2017 to 2020. This campaign was recognised by the World Health Organization and the National Health Service Executive of Ireland for its outstanding outcomes. Comparing the Covid and HPV case-studies allows us to contrast ongoing live cases with a successful case from the past, providing an interesting comparative setting for understanding the challenges of social media engagement on vaccination issues as well as the strategies that have potential for success.

11 Gioia, D. a., Corley, K. G., & Hamilton, A. L. (2013). Seeking Qualitative Rigor in Inductive Research: Notes on the Gioia Methodology. *Organizational Research Methods*, 16(1), 15– 31. <http://doi.org/10.1177/1094428112452151>

2.5 Summary of the results

Social media platforms such as Twitter and Facebook have become an important space of interaction or engagement about the COVID-19 vaccination. The interaction happens mainly amongst individual (and less between groups or big users that tend to act in a broadcasting manner). These individual users are heterogeneous. Their discourses range from mild vaccine hesitancy (often related to individual cases of secondary effects) to individuals who claim that fundamental freedoms (e.g., movement, work, or vaccination) have been suppressed during the pandemic, and other individuals who advocate more radical conspiracy theories concerning the power of institutions and other renounced actors typically related to government or public agencies. They share a common discourse of the “mandate” to overcome oppression. Hesitant individuals and groups online are very much supported and amplified by echo-chambers that legitimise their arguments. The result is a high level of empowerment of these actors online. Most hesitant actors openly express themselves online, without avatars that anonymise them.

Social media platforms have also been used by pro-vaccine individuals and groups to not only express their opinions about the pandemic but also to engage with vaccine hesitant users in an attempt to address their hesitancy. Unlike the vaccine hesitant actors, the pro-vax groups work in an anonymous way, allegedly to protect themselves from threats and the high level of violence of some anti-vax actors. Their posts and conversations online are characterised by negative sentiments as they tend to express rejection of the anti-vax users’ messages.

While anti-vax and pro-vax users remain largely distanced in their discourses. Figure 3 - which graphically depicts the in-degree network of COVID-19 vaccine hesitancy Twitter exchanges, - shows the existence of frequent engagement between both types of users. Indeed, pro-vax users semantic network shows a frequent interaction with the anti-vax users. The interaction between users shows non-constant trends, with peaks of attention and interest that relate to key events. From our quantitative analysis we conclude that pro-vax users engage with anti-vax but their messages have a negative and often recriminatory emotional tone.

A more qualitative examination reveals that in each country, civil society organisations have formed with the objective of combating online misinformation about Covid vaccines and to create a pro-vaccination discourse. These organisations operate independently from public institutions; their members work in a range of activities but especially in the healthcare sector, and they protect their anonymity due to the threats received.

We focus our analysis on IoVaccino (Italy) and LesVaxxeuses (France) which we have identified as the most prominent civil society organisations battling misinformation online. Both organisations use a variety of platforms to communicate online, mainly Facebook and Twitter.

COVID-19 vaccine hesitance is an ongoing phenomenon. As of January 2022, which is when our data collection ended, we were unable to find any significant results that would allow us to measure the impact of the pro-vax work on vaccine hesitancy. While there are no external measures of such impact, our qualitative study reveals that most of the online engagements fail to conclude with constructive deliberation practices, such as agreement on the topic and the public expression of future collaboration amongst the groups.

Our qualitative studies suggest that although the work done by the two focal organisations has contributed to build a strong pro-vax discourse online through which they have been able to engage with vaccine hesitant users, the effectiveness of this engagement has been hindered for two main reasons: first, their lack of emotional equipment to deal with very strong and opposing arguments put forward by people whom they perceive as belonging to an 'opposite' group, which impedes constructive forms of empathy. Second, the moral superiority position in their argumentation that causes them to develop a paternalistic and evangelistic discourse that, again, impedes the understanding of their adversary as an equal.

We study a third country case, which occurred in Ireland between 2017 and 2019, concerning the HPV vaccine. This is a context very similar to the Covid vaccine, in that strong contestation was expressed in social media. Our study reveals successful strategies used by civil society organisations on the internet. We argue that this success was due to their ability to connect and empathise with the hesitant users through a variety of communicative strategies, which we term as mirroring strategies, collective identity strategies (reverse identity building and legitimacy strategies), and emotional enactment strategies.

3.0 Main conclusions from the case studies

3.1 A legal and cultural analysis of the context

The initial phase of the COVID-19 pandemic was characterised by frequent government advisories and national legislative measures aimed at regulating public behaviour to an extent that was entirely unprecedented in modern times. The most draconian measures included national lockdowns, which were later reinforced by further restrictions curbing activity in society at large (e.g., school closures, the closure of non-essential shops and businesses) and behavioural mandates (such as mask wearing, social distancing, etc.) In Europe, the policy choices tended to favour tight restrictions — a trend strongly reflected in France and Italy — but the picture was far from uniform since the public health measures depended on the evolving impact of the pandemic in each country. In every country where exceptional measures were imposed for public health reasons, there were risks that the extreme haste with which the legislation was drafted disproportionately threatened other fundamental rights and values of the citizenry, whether these had been guaranteed in national law, national constitutional provisions, EU law, or the European Convention on Human Rights (ECHR). It must be noted, however, that litigants have not, to date, had much success in Covid-themed applications before the European Court of Human Rights.

At the same time, the unique context of a global pandemic proved to be a hothouse for the proliferation of fake news and online misinformation, which risked jeopardising public health. While some social media platforms are finally taking voluntary action to tackle fake news, there is growing acceptance that there is too much at stake to leave the task to voluntary initiatives. Views on what form(s) the regulation of social media and online disinformation should take, however, are variable at national and EU levels. In France, prior to the COVID-19 pandemic, the introduction of a specific ‘Law against manipulation of information’ came into force in 2018, and this was followed by decrees n° 2019-53 and n° 2019-297, the latter imposing reporting obligations on online platforms. By contrast, in Italy, there is no specific legislation regulating fake news in the modern sense. Recent draft legislation (pre-Covid) would have amended the penal code and imposed heavy fines for spreading fake news but it failed to pass. In the UK, the Draft Online Safety Bill aims to create a strong new regulatory framework to tackle harmful online content. In Ireland, the Online Safety and Media Regulation Bill (OSMR Bill) was approved by cabinet in January 2022. Lastly, the EU has recently been proactive in developing disinformation policy instruments. The European Commission’s Action Plan on Disinformation and the Code of Practice on Disinformation (to which Facebook, Google, Twitter, and TikTok have all signed up) envisage self-assessment of commitments. These relatively light-touch instruments are aimed at setting the trajectory for Digital Services Act (DSA) and Digital Markets Act (DMA) packages to upgrade digital services and promote a safer online space in which fundamental rights are protected. Finally, the European Democracy Action Plan (EDAP) is in the process of being implemented, with the goal of transitioning from the Code of Practice on Disinformation into a co-regulatory model of the obligations and accountability of online platforms.

3.2 Quantitative analysis

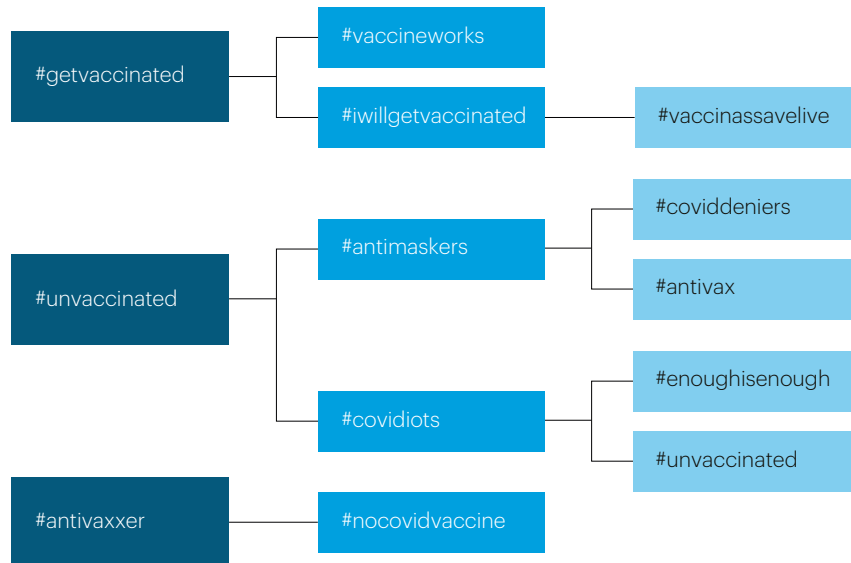
While broadcast mechanisms allow traditional media to control the information disseminated, online platforms work on the premises of engagement and open access to participation. Social media digital platforms have been chosen by all types of actors to express their ideas and feelings about COVID-19 and the vaccination programs developed in the different countries. Social media platforms such as Twitter, Facebook, Reddit, Instagram, and TikTok have become spaces in which the vaccine hesitant groups in particular have found a space to exercise their voices and disseminate their views.

To understand how the discourses of vaccination during COVID-19 are created in the online spheres, we looked at Twitter. We selected Twitter as our main platform of analysis for the following reasons. First, the availability of data. Conversations and profiles are open and publicly accessible, and Twitter allows the downloading of data through different APIs. Second, Twitter has been selected as the most influential social media space for political and social debates. Concretely, Twitter has been defined as a key space for understanding how misinformation happens and how it spreads.¹²

We extracted tweets published between September 2020 and December 2021 (from the beginning of the implementation of the vaccines programmes in the UK and Europe until completion of this project). Our sampling strategy extracted 624,541 Tweets and 375,459 Retweets via a proprietary API. Tweets were selected on the basis of a semantic network (see Figure 1) of the most popular hashtags in the area of COVID-19 vaccination hesitancy; these were identified from a literature review of the topic.¹³

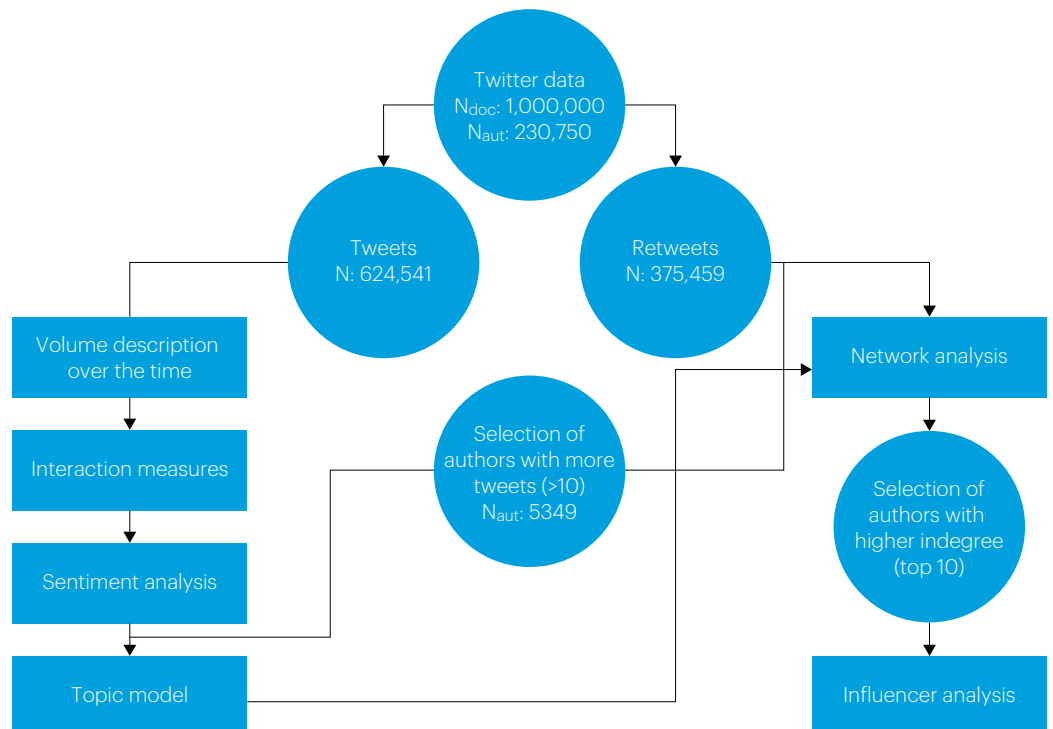
- 12 Bonnevie, Erika; Gallegos-Jeffrey, Allison; Goldberg, Jaclyn; Byrd, Brian; Smyser, Joseph (2020). "Quantifying the rise of vaccine opposition on Twitter during the Covid-19 pandemic". *Journal of communication in healthcare*, online first: <https://doi.org/10.1080/17538068.2020.1858222>; Jamison, Amelia M.; Broniatowski, David A.; Dredze, Mark; Sangraula, Anu; Smith, Michael C.; Quinn, Sandra C. (2020). "Not just conspiracy theories: Vaccine opponents and proponents add to the Covid-19 'infodemic' on Twitter". *Harvard Kennedy School misinformation review*, v. 1, n. 3.; Shapiro, Gilla K.; Surian, Didi; Dunn, Adam G.; Perry, Ryan; Kelaher, Margaret (2017). "Comparing human papillomavirus vaccine concerns on Twitter: a cross-sectional study of users in Australia, Canada and the UK". *BMJ open*, v. 7, n. 10, e016869.; Cossard, Alessandro; De-Francis-Morales, Gianmarco; Kalimeri, Kyriaki; Mejova, Yelena; Paolotti, Daniela; Starnini, Michele (2020). "Falling into the echo chamber: the Italian vaccination debate on Twitter". In: *Proceedings of the International AAAI conference on web and social media*, v. 14, pp. 130-140.; Johnson, Neil F.; Velásquez, Nicolás; Restrepo, Nicholas-Johnson; Leahy, Rhys; Gabriel, Nicholas; El-Oud, Sara; Zheng, Minzhang; Manrique, Pedro; Wuchty, Stefan; Lupu, Yonatan (2020). "The online competition between pro-and anti-vaccination views". *Nature*, v. 582, pp. 230-233.
- 13 Muric, G., Wu, Y., & Ferrara, E. (2021). COVID-19 Vaccine Hesitancy on Social Media: Building a Public Twitter Dataset of Anti-vaccine Content, Vaccine Misinformation and Conspiracies. arXiv preprint arXiv:2105.05134.; DeVerna, M. R. et al. CoVaxxy: A global collection of English-language Twitter posts about COVID-19 vaccines. arXiv (2021); Lamsal, R. Coronavirus (covid-19) tweets dataset, <https://dx.doi.org/10.21227/781w-ef42> (2020)

Figure 1: Hashtag network



We applied different descriptive and inference methods to this database: 1) A distribution of the collected texts by date; 2) Semantic network analysis to study relationships based on retweets, mentions, and quotes; 3) Interactivity analysis, to evaluate how well a tweet manages to be part of a larger conversation; 4) Sentiment analysis, to identify the trend related to the vaccine; and 5) Topic modelling, aiming to extract information in the form of semantic groups latent in the corpus. Figure 2 depicts the methodological strategy.

Figure 2: Methodological strategy diagram



The study shows the main characteristics of how discourse around vaccination hesitancy is produced and structured in social media exchanges. In Figure 3, we graphically depict our main findings in the form of a network distribution. We used the results of the topic modelling to associate a label to users based on the orientation of the tweets produced. Each node in the graph has an assigned colour based on its pro-vaccine (red) or anti-vaccine (green) orientation. The proportion of pro-vax accounts is 62.47%, with anti-vax accounts being 37.53%.

We highlight three main results from the analysis, as follows.

First, the semantic network analysis allows us to not only identify the pro-vax and anti-vax communities, but also how they are structured and interact. We verify a polarisation effect, where users with a specific position tend to exchange mainly with users who have a similar position. However, the interaction mode presents nuances. The network presents two subgroups: The largest (to the top of the figure) relates to the pro-vax users and contains self-referential pockets of the two factions, but these are very close to each other. This shows that the two ideological poles clash with each other, mentioning and intersecting with each other. The second subgroup (to the bottom of the figure) is a polarised anti-vaccine cluster, representing a group of individuals who tend to engage among themselves with more specific topics and mentions within the group. We noticed the existence of nodes that attract a lot of discussion about themselves, constituting dense subgroups in which users mention and respond to each other. These show an exchange of relationships between users that takes place in two subgroups of the network. The semantic network show that the two ideological poles interact, intersecting and mentioning each other and these engagement are mainly semantically close to the pro-vax users. Interaction between users shows inconstant trends, with peaks of attention and interest that relate to key time events.

Figure 3: In-degree network of COVID-19 vaccine hesitancy Twitter exchanges

Represents mentions to the users / interaction with the end user



Second, we show a general negative sentiment in the tone of discourse in both communities, but especially in that of the pro-vax groups. In a more qualitative examination of the data, we often see negative sentiment from the pro-vax groups to the discourses of the anti-vax groups. Positive sentiment tends to be limited to the feeling of protection and resolution of tragic events in pro-vax users.

Third, the semantic profile for each group shows stark differences in terms of the language adopted, the content that emerges, and the lexical relations. The anti-vax users express themselves with references to individuality, attacking the non-transparency of central institutions (such as political and scientific). They also talk about the negative effects of vaccines in human health and more concretely in their bodies. The pro-vax users express themselves with a double timbre: a concern about safeguarding the community and the closest social relations, and an attack to the opposing community arguing that their life is in danger because of the anti-vax users.

3.3 Country case study I: France and Les Vaxxeuses

Vaccine hesitancy in France is not new, with anti-vaccination positions starting as early as the discovery by Louis Pasteur of the vaccine against rabies.¹⁴ Indeed, France has been described as the most vaccine-hesitant country in the world,¹⁵ and its negative attitudes and unfavourable opinions about vaccination have been increasing over the past 20 years. Thus, it is unsurprising that as of December 2020, only 40% of the French population was willing to be vaccinated against Covid.¹⁶ The main reason behind this hesitancy seems to be a high mistrust of vaccines, which is related to public health scandals during past decades (i.e., Hepatitis B, MMR, and H1N1 flu).¹⁷

France started its COVID-19 vaccination campaigns in January 2021.¹⁸ As early as March of that year, concerns spread about the safety of the AstraZeneca vaccine, which was possibly linked with cases of thrombosis in vaccinated people. On March 15, 2021 several European countries, including France and Italy, temporarily suspended the administration of the AstraZeneca vaccine after some suspected cases of thrombosis. The suspension lasted for three days, with the EMA declaring the vaccine to be effective and safe on March 18, 2021. Running parallel to the rollout of the vaccination campaigns, governments gradually introduced regulations oriented at both reducing restrictions for vaccinated individuals and increasing vaccine rollout. On July 1, 2021, the European Union introduced the Green Pass, a certificate aimed at making travelling from and to other countries within the EU easier. In France, this came into force from July 21, 2021 as the *pass sanitaire*, which was compulsory for accessing public places, and which later became mandatory for employees in the health and public sectors.

The diffusion of fake news was addressed as a threat to people's health and wellbeing and to the stability of public institutions. In a video released online, French President Emmanuel Macron warned against fake news concerning the vaccination, which was intended to 'scare people and whose aim is to convince some of you or those close

14 LCP. (2021, June 19). Vaccins, la valse hésitation | Documentaire LCP. <https://www.youtube.com/watch?v=wBcpB2hLfHI>

15 Cambon L, Schwarzinger M, Alla F. (2021). Increasing acceptance of a vaccination program for coronavirus disease 2019 in France: A challenge for one of the world's most vaccine-hesitant countries. *Vaccine*. Epub, 2022 Jan 21;40(2):178-182. doi: 10.1016/j.vaccine.2021.11.023.

16 Kelland, K. (2021, January 15). Exclusive: International COVID-19 vaccine poll shows higher mistrust of Russia, China shots. Reuters. <https://www.reuters.com/article/us-health-coronavirus-vaccines-attitudes-idUSKBN29K16T>

17 Ward, J. K., Colgrove, J., & Verger, P. (2018). Why France is making eight new vaccines mandatory. *Vaccine*, 36(14), 1801-1803. <https://doi.org/10.1016/j.vaccine.2018.02.095>

18 Salvioli, L. (2020, May 20). La storia del coronavirus dall'inizio. www.ilsole24ore.com. <https://lab24.ilsole24ore.com/storia-coronavirus/>

to you not to get vaccinated’.¹⁹ In addition to this, in January 2022 members of the French parliament received threatening messages from anti-vaxxers for their support for the measures taken by the government, especially those related to the creation of a vaccination passport.²⁰

In this context, Les Vaxxeuses is one of the leading pro-vaccination activist groups working mainly online in France. The group was started in 2017 to counter fake news related to mandatory vaccines for infants, and with the availability of the COVID-19 vaccines, the group experienced an increase in its activity and in the number of its followers. The group’s goal is not to only broadcast information to enhance people’s knowledge about vaccines but also to engage with the anti-vaxxer users to create a dialogue that, ideally, will convert them to vaccination. Members use pedagogy and humour in their attempt to debunk fake news; they disseminate what they claim to be rigorous information and report dangerous anti-vaccine behaviours. They are now mostly active on Twitter and Facebook, and are a group of about ten people, with a diverse composition in terms of gender, age, and profession.

The research conducted an exhaustive multi space data collection to understand not only how Les Vaxxeuses engage but also who they are and how they are perceived by French society. This includes the collection of posts in social media (1300 tweets and four accounts in Twitter, 200 posts in Facebook), videos (seven videos from YouTube and BFMTV), press articles (21 articles from online and printed press), journal articles (6 articles), reports (2) and surveys (3 IPSOS surveys) and official websites.

Our study reveals that Les Vaxxeuses have created an online discourse to inform the internet public on the benefits of vaccination. They also, and more interestingly, counter argue anti-vaccination information. We observe how they achieved a dialogue engagement with different stakeholders who exhibited a range of vaccine hesitancy. We note the importance of working with emotions when interacting with antivaxxers. We show how there is a process of emotional work that consists of emotional equipment, emotional connection or disconnection, and dissensus regulation that helps Les Vaxxeuses to deal with engagements that very often have a high level of discursive violence. We argue that given that most of the engagements do not lead to successful deliberation and agreement, Les Vaxxeuses, despite their emotional equipment, are not yet able to develop a ‘traditional deliberative’ engagement process that will lead to anti-vaxxers’ conversion. Nevertheless, Les Vaxxeuses have created a space of acknowledgement of the counterpart (i.e., the anti-vaxxer users and groups) that is helping them to do the following: first, to create a discursive space of pro-vaccination, populating the internet with information, sources, statements, and conversations about the importance of vaccines, through which they are able to reduce Covid risks. Second, to create a space of deliberation with antivaxxers. Third, to understand the level of disagreement and emotional confrontation, and to equip themselves emotionally for these debates online.

19 Martin, C. (2021, August 5). “Se vacciner, c’est se protéger”: Macron met en garde contre les fake news autour de la vaccination [Video]. BFMTV. https://www.bfmtv.com/politique/se-vacciner-c-est-se-protger-macron-met-en-garde-contre-les-fake-news-autour-de-la-vaccination_AN-202108050179.html

20 Francetv.info. (2022, January 9). Pass vaccinal : les menaces de mort sur les députés se multiplient depuis le début de l’année. https://conseils.truetiger.info/update-https-www.francetvinfo.fr/sante/maladie/coronavirus/pass-vaccinal-les-menaces-de-mort-sur-les-deputes-se-multiplient-depuis-le-debut-de-l-annee_4910475.html

3.4 Country case study II: Italy and IoVaccino

COVID-19 critically impacted Italy, which was the first country to go on a nationwide lockdown in March 2020. Lockdown had a double goal: to reduce the uncontrolled spread of the virus and to alleviate the extreme pressure on the healthcare system. This first lockdown lasted for more than two months and it was followed by a number of restrictive measures that were still in force in January 2022. Every day during the lockdown, the then Prime Minister Giuseppe Conte would discuss the evolution of the COVID-19 pandemic situation with the Head of Civil Protection. Over one million people watched the short conference every day. As often happens during national crises, the emergency and severity of the situation created a feeling of unity,²¹ and people started to meet on the balconies, signing to or simply looking at each other.

The new-found unity was short-lived, being quickly disrupted by the fracture that the vaccines created in Italian society. Former Prime Minister Giuseppe Conte worked extensively with the EU to ensure Europe would adopt a common strategy for buying the vaccines and administering them to the citizenry. The vaccines were portrayed by the media as saviours that would enable the populace to return to normal life, such that the arrival of the COVID-19 vaccine was warmly welcomed by the public. However, once adverse reactions to the AstraZeneca vaccine started to be registered, the perception quickly changed. The subsequent schism resulted in a large part of the population (around 10-15%) refusing to get the vaccine.

This diffused resistance to the vaccine led the Government and the new Prime Minister Mario Draghi to introduce increasing restrictions for those who remained unvaccinated. The Green Pass, originally only intended to reduce the mobility of the unvaccinated, has been extended to other activities. In reaction, the anti-vax movement progressively teamed up with the far-right to protest against the ‘dittatura sanitaria’ (health dictatorship). The No Green Pass movement has been protesting once a week for over six months.

IoVaccino was selected for study as it is the largest and more active open group in Facebook Italy, with more than 100,000 participants. It was created in October 2015 during the controversy that preceded Italy’s introduction of mandatory vaccination for school children. The IoVaccino core group is composed of three women who describe themselves as ‘engaged mothers’. The group is mainly concerned with organising the diffusion of knowledge about vaccines and it works in conjunction with a scientific board composed of medical experts from different areas who contribute to the group in their spare time. The group’s goal is to promote, to parents and families in general, correct and scientifically grounded information around vaccines and vaccinations. While IoVaccino has been active on social media since 2016, it was during COVID-19 that the group gained visibility, growing to more than 100k followers.

For this study, we collected data from Facebook on the group IoVaccino from the period of their first post on the COVID-19 pandemic, which was released on January 22nd 2020, up till January 22nd 2022. The data is complemented by the discussions that the participants in the group have carried out outside the group, commenting and engaging in dialogue under the IoVaccino. Overall, data gathered for this case includes posts in social media (330 posts and 1400 comments in Facebook in two accounts), press articles (21 articles from online and printed press), journal articles (16 articles), and official websites.

21 Kinnvall, C & Mitzen, J (2018). Ontological security and conflict: the dynamics of crisis and the constitution of community. *J Int Relat Dev* <https://doi.org/10.1057/s41268-018-0161-1>

Our analysis shows how this group, which has at its core the goal of helping scared and doubtful individuals to successfully navigate online disinformation about COVID-19 vaccines, soon became unable to engage in dialogue with them, instead adopting a communication style marked by confrontation. This confrontative communication style prevented any form of regulation of the dissensus and, indeed, any actual constructive engagement or deliberation. In our analysis, we show how this is mainly due to the moral positioning that the group adopted around the notion of scientific truth. Having scientific truth as an unnegotiable value left no room for doubt or alternative opinions. This idea of the scientific truth created a strong common ground for the members of the community and helped build a cohesive collective identity, however its extreme defence has led the members of the group to develop a ‘moral superiority’ communication style that does not recognise that dissenting others may also have valid opinions. Eventually, this moral superiority has led more and more dialogues to be oriented towards the destruction of the enemy. The consequent cessation of dialogue (because the opponents are perceived as irremediably wrong) has fomented polarisation.

3.5 Country case study III: Ireland and the HPV vaccine

In 2010, the Irish government introduced a national vaccination campaign for young girls and boys against HPV. Up until 2015, a stable rate of about 85% of young girls (17-18 year-olds) was fully vaccinated (3 doses). However, this number dropped to less than 60% of the same population in 2017. This was the result of an active anti-vax communication campaign by lobby groups of parents who argued that the vaccine caused harm, even though scientific research had found no proven links between the vaccine and the alleged side effects. One of the major actors against the vaccine is the REGRET (Reactions and Effects of Gardasil Resulting in Extreme Trauma) group, launched in 2015, which has published more than 60 stories of alleged victims on its website (written testimonies and videos).

The drop in vaccination rates in Ireland caught the attention of the World Health Organization (WHO), which urged the country to take action. The response to the anti-vax campaign has been led by a cohort of scientists and activist. One activist stood out in the fight against cervical cancer: Laura Brennan. Laura Brennan was a young woman from County Clare. Laura had lived a normal life up until 2016, but in December 2016, she was diagnosed with cervical cancer. She was aged just 24. In 2017, she decided to speak up when she learned she could not be cured and started a strong online engagement with hesitant users and anti-vaccination groups. She contacted the HSE (Ireland’s Health Service) and worked conjointly with them to spearhead the fight against the growing distrust of a vaccine that, had it been available a decade earlier, could have saved her life.

Laura’s actions that eventually became coordinated with the government and associated bodies led to a significant increase in the vaccination rate. By 2019, the vaccination rate had returned to 70% nationally, and in her home county of Clare, it reached 90%. Laura Brennan died in March 2019, but her testimony is still being relayed by the Irish government and WHO. In May 2019, Ireland’s national television network, RTE, broadcast a documentary on Laura Brennan’s end of life: ‘This Is Me’. Since 2019, the fight against fake news has become the motto for the public HPV vaccination campaign in which Laura Brennan and her group played a major role.

We analyse how Laura Brennan and her family worked to overcome fake news on HPV vaccination and achieved a substantial increase on vaccination rates. For our study, we constituted a rich set of data collected online, beginning in 2015 at the beginning of the drop in HPV vaccinations, and ending in 2020, one year after the death of Laura Brennan. The data includes the collection of posts in social media (3 accounts and 2,400 tweets on Twitter, 185 posts on Facebook, photos and videos from Instagram), videos (28 videos from YouTube and RTE website, 527 minutes), radio recordings (75 minutes), press articles (36 articles), and official websites.

The analysis reveals how the anti-vax movement used videos and social media text to create fear. They published images of themselves suffering and talked about the pain caused to them by the vaccines they had been given. We argue that Laura and her team engaged with families and the anti-vaccination groups on social media with the following strategies. First Laura developed mirroring strategies that embodied the cause; these evoked empathy and identification from people who were against HPV. Second, the group created a distancing strategy from the anti-vaxxers' identity; this successfully turned negative emotions into positive emotional energy. Third, Laura developed an enactment strategy as a call for action for people who were engaged in the problem. Laura's case points at the importance of creating identification with 'hesitant' people and engaging with them at the same emotional level; Laura did this through what we term 'mirroring strategies'. The case also emphasises the importance of transforming negative emotional energy into positive emotional energy in order to take people out of the emotion of fear.

4.0 Policy recommendations

The findings of this study relate to two policy areas. First, the construction of systems of trust in health issues, and second, the governance frameworks of online digital platforms in relation to disinformation online and the so-called fake news. We have policy recommendations for both areas.

4.1 The construction of systems of trust in health issues such as COVID-19 and the need to increase vaccination rates amongst the population

Our study relates to how policy makers can work with civil society organisations in the creation of systems of trust. These systems of trust require, first, the creation and diffusion of normative frameworks and, second, for the social destruction of reality to be effectively withstood. This study focus on the second aspect, and more concretely on the role played by civil society actors and organisations (that we call internet activists) in using social media channels to engage with different stakeholders, including the vaccine hesitant. In this specific area we recommend a series of measures that government agencies could develop to support the engagement processes.

We recommend supporting social activists who are working online through the creation of partnerships and other forms of institutional support. An example is the partnership developed by HSE and WHO with Laura Brennan. Finding online reputed activists or internet influencers who are able to connect with the target audiences help a campaign to go beyond scientific strategies of legitimacy and connect emotionally with the audience. It also reduces the perception of domination that hesitant groups might have in relation to discourses created by governmental agencies. Public officers and private actors can learn from each other about how to articulate discourses and create engagement through a process of trust.

More specifically, the support of online social activists should be oriented towards the following areas:

- **Technical support systems:** work on repositories of data, providing a database of the most up to date scientific information, and allowing access to a pool of scientists that can support the social activists.
- **Legitimacy support systems:** the inclusion of social activists in already legitimate systems of information and the production of scientific information. Examples include national and international agencies that can involve activists in creating scientific research or in developing information campaigns.
- **Emotional support systems:** social activists could benefit from receiving social and psychological support from specialists in internet violence and stress. There is also a need for sociological support, which may be obtained from the creation of a community of support. In this sense it is often very useful to work towards creating a collective identity. This can be done by, say, organising engagement events (such as meetings, parties).

- **Communication strategies:** supporting activists with technical advice on how to engage online. The different platforms require different technical skills, but more importantly, every online engagement requires the use of effective discourses. These should include work towards the legitimization of arguments and the creation of collective identity. Activists should be assisted to understand the process of emotional regulation, the creation of emotional energy, and the transformation of negative emotional energy into positive emotional energy.
- **The creation of inclusive discourses.** Working to alleviate the problem of moral superiority in health-related discourses is fundamental to developing constructive engagement. Moral superiority discourses are often related to the creation of moral frameworks that are built on deontological (i.e., rule-based) ethical systems that can undermine the ability to empathise with others. The creation of inclusive discourses implies an acknowledgment of the ‘others’, a predisposition to listen and to deliberate, the exercise of emotional empathy, making efforts to understand the others’ values and priorities, and the creation of spaces of equal talk.

All these could also apply to public agencies that might act directly in the engagement with hesitant groups online.

4.2 The construction of governance frameworks in online digital platforms in relation to disinformation online and the so-called fake news

These governance frameworks include work with digital platforms on security, and also in the reduction of misinformation.

We recommend further work is done in the European Democracy Action Plan (EDAP) to transition from the Code of Practice on Disinformation into a co-regulatory model of the obligations and accountability of online platforms. We strongly recommend these new regulations and codes of practice include the protection of vulnerable actors and communities, such as social activists who promote Covid vaccinations. We acknowledge this is a challenging area for various reasons, and an area where progress is at different stages across countries and at national / EU levels. Every country should review existing law and policy in the light of the changing online context, to identify scope for strengthening governance in the area of misinformation and online harm. In such efforts, we recommend approaches that promote broad consultation with stakeholders, which are inclusive, proportionate, and respectful of human rights obligations.

To protect social activists, we recommend the development of the following measures:

- **Safety and security mechanism.** These should aim at reducing the violence in online engagements. On the one hand, these measures should involve working with digital platforms on understanding the most violent actors (including super users and other influencers) and spaces of hate speech, and advising social activists on how to deal with them. Creating filtering systems (both automatic and human-led) that can detect hate speech and reduce it. This might include the moderation by digital platforms of content that might be considered ethically unacceptable or which promotes extreme violence. On the other hand, measures should be put in place to protect social activists. They should involve security measures attached to social activist accounts to ensure anonymity. It will also involve working with digital platforms in the development of any necessary blocking strategies. Such measures should be informed by best practice, subject

to broad consultations on rights issues at stake, proportionate, and should comply with human rights obligations.

- **Effectiveness systems and trainings.** Digital platforms should work with government agencies and social actors on learning how to develop effective messaging and engagement. We recommend that approaches informed by research which maximise co-creation and co-operation between digital platforms and government agencies will optimise the effectiveness of training for users.

5.0 Next steps and future research

We recommend that future research should look at the following areas:

I. A micro analysis of the actors, communities, and concrete forms of engagement, improving understanding of the destruction and re-construction of social realities and trust systems.

Vaccine hesitant individuals and communities are heterogeneous and complex. An in-depth sociological and managerial analysis should be developed to understand the actors, the network, the forms of relations, the normative system, key discourses, messages, key platforms, and forms of communication. Our study provides a first understanding of all these questions and also opens up questions such as:

- Who are these different groups under the vaccine-hesitant umbrella? What are their normative frameworks, their values, and their forms of engagement?
- What are the political agendas of misinformation and, beyond these, what moves the actors who do not necessarily have a strong political agenda?
- What is the role of emotions, such as fear and solidarity, in the spread of alternative discourses and the destruction of reality?
- What is the role played by manipulating or engaging social emotions such as anger and shame in enhancing, exercising, or resisting new discourses and alternative realities?

We also recommend a further understanding of individuals, organisations, and groups that can counteract the destruction of social realities. Our study focuses on the forms of engagement in social media and opens up further questions, such as:

- How can organisations and groups counteract the emergence of disinformation and eventually the creation of a polarised society?
- What organising and collective action efforts can restore trust in institutions such as the state and democracy?

II. A macro analysis of culture, institutions, and how they shape normative frameworks in new grand challenges (such as pandemics and climate change) but also the creation of alternative discourses aimed at misinformation and the destruction of social reality.

Our study reflects on these discourses and institutions and shows how different actors shape institutional orders and can support each other. However, further questions remain under-researched. For example:

- What institutional antecedents, processes, and mechanisms underlie the increasing polarisation of discourse and the fragmentation of the public sphere? And what are the consequences of such polarisation on the institutions of contemporary society?
- What institutions underlie the creation and diffusion of fake news? In what ways are these institutions different from historical manifestations of similar phenomena in the past?
- What are the organisational implications of the ‘institutional breakdowns’ and the crisis of trust in contemporary institutions (like for example the AstraZeneca crisis in Europe in December 2021)? And how have new grand challenges, such as the Covid pandemic, accelerated or reinforced these institutional breakdowns?
- How do the new forms of power interact with other non-technological actors in the creation of polarised societies? For instance, what role do algorithms play in concentrating attention, creating reach, and manipulating emotions on social media platforms?

Our research points at the danger of excessive emphasis on the normative positions of current institutions and their supporting actors. We also call for a more fundamental reconsideration of the institutional factors that have led to important processes of destruction of reality, especially during the recent pandemic. We encourage current institutions to question their use of certain pejorative terms, such as fake news and anti-vax, which reduce the possibility of acknowledging an adversary and understanding their complexity. We encourage researchers to consider the importance of understanding the pandemic in intersection with other societal issues, such as the rise of populism, to further understand the problem of vaccine hesitancy.

Finally, we question the institutional approach to the pandemic, which has excessively focused on deontological ethics. We urge the adoption of an alternative approach that promotes an ethical system based on the ethics of care and the construction of inclusive and caring societies.

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