

Infodemic: disinformation and media literacy in the context of COVID-19

Disinfodemic: deciphering COVID-19 disinformation¹

By Julie Posetti² and Kalina Bontcheva³

The World Health Organization (WHO) has described the disinformation⁴ swirling amidst the COVID-19 pandemic as a “massive infodemic” – a major driver of the pandemic itself.

Disinformation long predates⁵ COVID-19. The fabrications that contaminate public health information today rely on the same dissemination tools traditionally used to distribute disinformation. What’s novel are the themes and their very direct impacts.

COVID-19 disinformation creates confusion about medical science with an immediate impact on every person on the planet, and upon whole societies. It is more toxic and more deadly than disinformation about other subjects. That is why this article coins the term disinfodemic.

This text facilitates the understanding of this new menace, and of the many types of responses that are unfolding internationally. To do this, it unpacks four dominant formats of COVID-19 disinformation and presents a typology that groups the range of responses to the problem into ten classes.

The findings presented herein are the result of desk research carried out by the authors, with inputs provided by research collaborators.⁶ The dataset on which the findings are based consists of a sample of over 200 articles, policy briefs, and research reports. This dataset was identified by the researchers through systematic searches in public databases curated by the Poynter Institute’s International Fact-Checking Network (IFCN), Index on Censorship, the International Press Institute (IPI), and First Draft News, along with the websites of news media, national governments, intergovernmental organizations, healthcare professionals, NGOs, think tanks, and academic publications. The keywords that were used included “disinformation”, “misinformation”, “COVID-19”, “coronavirus”, “epidemic” and “pandemic”.⁷

¹ In 2020, the United Nations Educational, Scientific and Cultural Organization (UNESCO) produced two policy briefs to assist intergovernmental organizations, individual states, civil society, news media, and other stakeholders to grapple with the disinfodemic which fuels disease and disarray around the world. This article is an edited version of the homonymous policy brief available at: <https://en.unesco.org/covid19/disinfodemic>

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⁴ This article uses the term “disinformation” to broadly refer to content that is false and has potential negative impacts. The focus on the damaging effects of fabricated and misleading information, rather than the motivation for its creation and dissemination, explains the use of the term in this article.

⁵ Find out more: <https://www.icfj.org/news/short-guide-history-fake-news-and-disinformation-new-icfj-learning-module>

⁶ They are Denis Teyssou (AFP), Clara Hanot (EU DisinfoLab), Trisha Meyer (Vrije Universiteit Brussel), Sam Gregory (Witness), and Diana Maynard (University of Sheffield).

⁷ The research sought to use sources of countries in all continents, including (depending on the language capabilities of the researchers) materials in languages other than English, where possible. These sources were added into a database that will be continuously updated in the coming months, which is publicly accessible at <https://www.disinfo.eu/coronavirus>. While the disinfodemic is fast-moving and vast in scale, this article represents findings based on source materials included in this database as of April 10, 2020.

(...) disinformation about COVID-19 impacts content across the board, including content regarding the origin, spread, and incidence of the disease, symptoms and treatments, and responses from governments and other players.

Why access to quality information matters

To make sense of the disinfodemic, consider its opposite: information as a basis for knowledge. It is access to information – and not to disinformation – that makes the right to freedom of expression meaningful and helpful to societies. Verifiable and reliable information, such as the information produced in science and professional journalism, is key to building what UNESCO calls “knowledge societies.” The disinfodemic works diametrically against this.

Today, the Internet is the key distribution mechanism for both disinformation and information. It underpins the transmission function in the flow of messages, through which the production of both disinformation and trustworthy information connects to the reception of this content and engagement with it.

The what, why, and how of the COVID-19 disinfodemic

Disinformation linked to COVID-19 is already prolific,⁸ threatening not just individuals but societies as a whole. It leads to citizens endangering themselves by ignoring scientific advice, it increases distrust in policymakers and governments, and it diverts journalists’ efforts towards reactive disproving of falsehoods instead of proactive reporting of new information. It puts everyone on the back foot.

The motivations for disinformation are several, such as to make money, gain political advantage, undermine confidence, shift blame, polarize people, and undermine responses to the pandemic. Even so, some drivers may be ignorance, individual egos, or a misguided intention to be helpful. The disinformation entailed can be shared by individuals, organized groups, some news media outlets, and official channels – wittingly or unwittingly.

The disinfodemic often hides falsehoods among true information and is disguised by familiar formats. It resorts to well-known methods that range from using false or misleading memes and fake sources, to trapping people into clicking on links connected to criminal phishing scams. The result is that disinformation about COVID-19 impacts content across the board, including content regarding the origin, spread, and incidence of the disease, symptoms and treatments, and responses from governments and other players.

⁸ Find out more: <https://www.poynter.org/ifcn-covid-19-misinformation/>

Four key types of disinfodemic formats

In tainting public understanding about the different aspects of the pandemic and its effects, COVID-19 disinformation has exploited a wide range of formats. Many have homed in on anti-vaccination campaigns and political disinformation. They frequently smuggle falsehoods into people's consciousness by focusing on beliefs rather than reason, and feelings instead of deductions. They rely on prejudices, polarization, and identity politics, as well as gullibility, cynicism, and individuals' search for simple sense-making in the face of great complexity and change. The tainting spreads in text, images, video, and audio. The main disinfodemic formats used are:



Emotive narrative construct and memes: false claims and textual narratives⁹ which often mix strong emotional language, lies and/or incomplete information, and personal opinions, along with elements of truth. These formats are particularly hard to uncover on closed messaging apps.



Fabricated websites and authoritative identities: includes false sources, polluted datasets, and fake government or company websites, as well as web pages publishing seemingly plausible information in the genre of news stories.



Fraudulently altered, fabricated, or decontextualized images and videos: used to create confusion, widespread distrust, and/or evoke strong emotions through viral memes or false stories.



Disinformation infiltrators and orchestrated campaigns: aimed at sowing discord in online communities, advancing nationalism and geopolitical agendas, practicing illicit collection of personal health data and phishing, or promoting monetary gain from spam and adverts for false cures. These formats may also include artificial amplification and antagonism by bots and trolls as part of organized disinformation campaigns.

⁹ Find out more: <https://www.poynter.org/coronavirusfactsalliance/>

Social media monitoring and fact-checking are vital tools for measuring and understanding the disinfodemic, as they uncover the continuously changing topics of viral disinformation.

Unpacking responses to COVID-19 disinformation

Disinformation responses identified in this article are categorized according to their aims, rather than in terms of the players behind them (e.g., Internet communications companies, governments, news media, and NGOs). Some players are involved in several of these responses.

Based on research conducted by the authors of the UNESCO-ITU Broadband Commission report,¹⁰ a hierarchical typology of disinformation responses was developed.

In total, ten types of responses were identified and grouped into four umbrella categories: (i) responses that focus on identifying COVID-19 disinformation; (ii) responses that govern the production and distribution of COVID-19 disinformation; (iii) responses to COVID-19 disinformation within production and distribution; and (iv) responses aimed at supporting the target audiences of COVID-19 disinformation campaigns.

Responses that focus on identifying COVID-19 disinformation

Identification responses pinpoint what content constitutes disinformation about COVID-19, which requires monitoring and analysis of information channels (e.g., social media, messaging apps, news media, websites). Some of the responses in this category involve fact-checking, which is usually followed by debunking. This means uncovering false claims, fake or decontextualized images, and then going on to prove them wrong and reveal the falsity to the public. Another type of response in this category is the unearthing of covert and coordinated disinformation campaigns.

MONITORING AND FACT-CHECKING RESPONSES

Monitoring and fact-checking responses tend to be carried out by independent fact-checking organizations, news organizations, platforms, academics, and civil society organizations (CSOs), as well as partnerships between these players. Such responses have mobilized a large-scale effort involving fact-checking organizations in over 70 countries coordinated through the International Fact-Checking Network (IFCN), WHO, social media platforms, NGOs, governments, and news organizations. WhatsApp, Facebook, Google, and Twitter have also recently pledged donations to fact-checkers and journalism organizations to help expose disinformation.

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¹⁰ Available at: <https://www.broadbandcommission.org/publication/balancing-act-counterering-digital-disinformation/>

ing topics of viral disinformation. For example, between January and March 2020, over 1,500 online falsehoods related to COVID-19 were fact-checked and debunked by an IFCN initiative.

While fact-checking responses make certain use of software tools and automation, they still rely predominantly on the human judgment of highly trained professionals, employed by independent organizations or news media. This generally mitigates the risk of bias creep and infringement of the right to freedom of expression.¹¹ Fact-checking is not applied to opinions, nor does its exercise contradict pluralism in the form of different narratives which mobilize and interpret facts within specific frames of understanding.

INVESTIGATIVE RESPONSES

Investigative responses go beyond the questions of whether a given piece of content is – at least partially – false (fact-checking), whether an outlet is reliable and unbiased (credibility labeling), and the engagement in the subsequent exercise of debunking. These responses dig deeper into the role of coordinated disinformation campaigns, including the originating players, degree and means of spread, the money involved, and affected communities.

Due to their more in-depth and resource-intensive nature, as well as the short timeline of the pandemic, there are fewer published investigative responses to COVID-19 compared to more straightforward fact-checking and verification efforts. Nevertheless, organizations that specialize in investigative responses are beginning to publish their first investigative insights. These include, for example, several NGOs, media outlets, think tanks, and joint investigations between academics and independent media outlets.

Responses governing the production and distribution of COVID-19 disinformation

This category of responses focuses on using political power to deal with COVID-19 disinformation, with the aim of shaping the wider information and content ecosystem. Individual states have been major players here. Their responses encompass introducing sanctions for certain cases, incentives for others, and proactive initiatives in the form of counter-disinformation. These efforts are generally aimed at the production and distribution of disinformation. They range from interventions that criminalize COVID-19 disinformation at one end of the spectrum, to increasing the supply of public health information at the other, and less commonly, support for independent media. The more restrictive responses have implications for journalism and media freedom worldwide.

While the stated purpose in this category of responses is to curtail falsehoods by addressing those creating them, some players are themselves contributors

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¹¹ Find out more: <https://www.article19.org/wp-content/uploads/2020/03/Coronavirus-final.pdf>

(...) international norms and standards do require that – even during crises – it is imperative that human rights are respected, such as the right to access information, and that any limitations are fully justified, as well as legal, necessary, and proportionate to the purpose.

to the disinfodemic, and others are using the pandemic to justify crackdowns on legitimate freedom of expression which could linger indefinitely.

LEGISLATIVE, PRE-LEGISLATIVE, AND POLICY RESPONSES

This category covers regulatory and law enforcement interventions by individual states. There has been, for example, a flurry of steps to prevent and punish acts of COVID-19 disinformation. These include criminalizing acts of producing or sharing information deemed false, misleading, and/or that contradicts official government communications about COVID-19 and covers content takedown instructions for Internet communications companies. Other policy responses are related to material support for news media as a bulwark against disinformation.

Among the measures being taken are emergency decrees giving political leaders sweeping new powers, and the application of existing emergency acts to COVID-19 disinformation to enable arrests, fines, and jail time for associated offenses.

Around the world, states have passed laws or regulations enabling the prosecution of people for producing or circulating disinformation, with custodial sentences ranging up to five years.

These steps carry with them the risk of catching legitimate journalism on the net. In some countries, producers of independent journalism have been arrested and detained or deported under these laws in the context of states responding to what they deem to be false information. These measures also risk infringing freedom of expression rights more broadly, due to the challenges of introducing emergency measures in ways that urgently address public health and safety threats. However, international norms and standards do require that – even during crises – it is imperative that human rights are respected, such as the right to access information, and that any limitations are fully justified, as well as legal, necessary, and proportionate to the purpose.

NATIONAL AND INTERNATIONAL COUNTER-DISINFORMATION CAMPAIGNS

This type of response focuses on developing counter-narratives to challenge COVID-19 disinformation and seeks to mobilize online communities to help spread official public health information, as well as debunk content deemed to be false. Partnerships have been forged between various Internet communications companies and authorities to provide interactive channels for official content. Measures in this category include campaigns and the creation of special units charged with producing content to counter disinformation.

Responses to COVID-19 disinformation within production and distribution

These responses focus on actions within the primary institutions in the communications sphere – such as those in news media, social media, social

messaging, and search. Far from being immune to disinformation, these entities are all susceptible to becoming vectors of “disinformation infection.” Recognizing this, many of them are undertaking responses related to content curation (i.e., editing and moderating). This changes the presence and prominence of different kinds of content, and in many cases, technology is used to support policy and practice. Sometimes, the responses are designed to reduce the economic incentives for those players seeking to make money out of COVID-19 disinformation.

CURATORIAL RESPONSES

These responses to the disinfodemic involve changes to curb the spread of COVID-19 disinformation through the services of Internet companies and to point users and audiences to official sources of public health information.

Content curation by the Internet communications companies can be assessed in terms of the recommendations of the UN Special Rapporteur on the Promotion and Protection of the Right to Freedom of Opinion and Expression¹² which call for safeguards to avoid the elimination of legitimate content in acts of “private censorship.”

Curatorial responses are also a major plank of news organizations’ strategies for combating the disinfodemic. Examples include specialized curations¹³ that centralize resources, guidelines, and explanatory reporting about doing journalism safely, ethically, and effectively during the pandemic.

TECHNICAL AND ALGORITHMIC RESPONSES

These disinfodemic responses use automation (e.g., browser plugins and mobile apps) and/or Artificial Intelligence (AI) to detect and limit the spread of disinformation, or to provide context and extra information on individual items and posts.

They can be implemented by social media sites, as well as search engines and third-party providers (e.g., browser plugins and mobile apps).

Some news media and fact-checking organizations are using automated tools to help speed up COVID-19 fact-checking and content verification. Other tools are listed in the First Draft’s Basic Toolkit,¹⁴ including utilities for image and video verification, identifying geolocation, advertising transparency tools, and COVID-19 dashboards.

The COVID-19 crisis, coupled with depleted workforces, has also posed a challenge for Internet companies that moderate content. Consequently, they have resorted to greater reliance on automated content moderation of COVID-19 disinformation. Facebook cautions that they will “make more mistakes,” and that they can no longer guarantee that

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¹² Find out more: <https://www.ohchr.org/EN/Issues/FreedomOpinion/Pages/ContentRegulation.aspx>

¹³ Find out more: <https://ijnet.org/en/stories#story:7100>

¹⁴ Available at: <https://start.me/p/vjv80b/first-draft-basic-toolkit>

users who appeal against automatic removal will have recourse to a human-based review process. Similar announcements were made by Google, Twitter, and YouTube. In cases where automation misjudges (e.g. a user post linking to a legitimate COVID-19 news or web site is removed), the dilution of the right to appeal and the lack of a robust correction mechanism harms the users' freedom of expression. This contravenes one of the key corporate obligations highlighted by the UN Special Rapporteur¹⁵ on the Promotion and Protection of the Right to Freedom of Opinion and Expression.

ECONOMIC RESPONSES

This response category is about steps to prevent people from making money from disinformation, to remove incentives for creating clickbait, counterfeit news sites, and other kinds of for-profit disinformation. So far, there are two main kinds of economic response: advertising bans and demonetization of COVID-19 content.

Responses aimed at supporting the target audiences of COVID-19 disinformation campaigns

This category of responses to the COVID-19 disinfodemic includes recommendations, resolutions, media and information literacy development, and content credibility labeling initiatives. These are all responses that seek to address the targets and receivers of disinformation, such as online communities, the news media, and their audiences.

ETHICAL AND NORMATIVE RESPONSES

This group of responses includes public condemnation of acts of disinformation, or recommendations and resolutions aimed at thwarting them. Such responses include statements from UN special rapporteurs, WHO officials, and political leaders. Additionally, there are examples of calls for reinforcing ethical conduct within journalism and for Internet communications companies to do more.

These responses have often taken the form of published statements, speeches, or articles designed to move others to stop sharing disinformation, to reinforce freedom of expression norms during the crisis, and to adapt ethical standards to address new challenges in responses to the disinfodemic.

The International Center for Journalists (ICFJ) has launched a Global Health Crisis Reporting Forum¹⁶ which includes an interactive, multilin-

¹⁵ Find out more: <https://www.undocs.org/A/HRC/38/35>

¹⁶ Find out more: <https://www.icfj.org/our-work/covering-covid-19-resources-journalists>

gual hub for thousands of journalists worldwide to aid in the production of informed, ethical reporting through direct access to credible sources of scientific and medical expertise, facilitate knowledge sharing and collaborative fact-checking/debunking in reference to COVID-19.

EDUCATIONAL RESPONSES

These responses are aimed at promoting citizens' media and information literacy, which includes critical thinking and digital verification skills. There are also responses aimed at journalistic education and training, arising from journalists being targets of, as well as key responders to, COVID-19 disinformation efforts. In the context of the disinfodemic, many educational measures are being delivered digitally – often using the same online environments where disinformation proliferates (e.g., social media). These responses are being rolled out especially by public service and information literacy projects around the world, media, journalism-oriented civil society organizations and journalism schools, as well as governments. As an example, the London School of Economics (LSE) published a guide¹⁷ to help children navigate COVID-19 disinformation, aimed at families forced by the pandemic to homeschool their children. Moreover, the Data & Society research group has produced material with ten tips for journalists covering disinformation.¹⁸

EMPOWERMENT AND CREDIBILITY LABELING EFFORTS

Empowerment and credibility labeling responses are complementary to educational responses. They focus specifically on content verification tools and web content indicators to empower citizens and journalists to avoid falling prey to COVID-19 disinformation. They also encourage good practices in media companies when publishing information. A widely used response is “signposting,” which involves providing links to trustworthy sources of information. This is complemented by website credibility labeling efforts aimed at helping citizens to quickly judge unreliable websites.

Conclusion

This article presented a structure for understanding the COVID-19 disinfodemic and possible responses to address this issue.

First, it has identified four main format types prevalent in disinformation about the COVID-19 crisis. The formats in use include the familiar modes of highly emotive narrative constructs and memes; fabricated, fraudulently altered, or decontextualized images and videos; disinformation infiltrators and orchestrated campaigns; and bogus websites, data sets, and sources.

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¹⁷ Available at: <https://blogs.lse.ac.uk/medialse/2020/03/26/coronavirus-and-fakenews-what-should-families-do/>

¹⁸ Available at: <https://datasociety.net/wp-content/uploads/2020/04/10-Tips-pdf.pdf>

In response to the crisis, UNESCO's Communication and Information Sector has stepped up its work concerning the "supply," "demand," and "transmission" dimensions of the disinfodemic.

Second, to make sense of the range of responses to the disinfodemic, the article organized these interventions into ten classes, which are located under four umbrella categories: (i) monitoring and investigative responses (which contribute to identifying COVID-19 disinformation, debunking it, and exposing it); (ii) law and policy responses, as well as state-based "counter-disinfodemic" campaigns (which together represent governance of the ecosystem); (iii) curation, technological, and economic responses (relevant to the policies and practices of institutions mediating content); and (iv) normative and ethical, educational, empowerment and credibility responses (aimed especially at the audiences targeted by disinformation agents).

In response to the crisis, UNESCO's Communication and Information Sector has stepped up its work concerning the "supply," "demand," and "transmission" dimensions of the disinfodemic. Regarding the "transmission" of disinformation, for example, UNESCO has been working to promote Internet Universality as a means to align digital development to sustainable development. This involves advancing norms based on the ROAM principles¹⁹ agreed by Member States.

Through its work, UNESCO promotes the view that the rights to freedom of expression and to access to information are strong remedies to the dangers of disinformation. It is these rights that enable governments and the public to make evidence-based decisions about policy and practice, as well as to implement and monitor responses to the pandemic that are founded on both science and human rights values.

¹⁹ ROAM principles of human Rights, Openness, Accessibility, Multi-stakeholder participation. Find out more: <https://en.unesco.org/internet-universality-indicators>

Interview I

Disinformation and data journalism

Natália Mazotte is the coordinator of Insper's Advanced Journalism and Communication Program. In this interview, she explains what data journalism is, discusses the role of open data in fighting disinformation, and presents strategies for combating disinformation outside the Internet.

Internet Sectoral Overview (I.S.O.)_ What is data journalism? How has this field emerged and been developed in Brazil?

Natália Mazotte (N.M.)_ Data journalism is a sub-field of journalism that includes techniques for investigating, presenting, and publishing information of public interest that go beyond what is traditionally learned in journalism. These techniques derive from areas such as design, statistical analysis, computer science, among others. In short, it is a sub-field of journalism that works with innovative techniques that draw on sources from other fields and allow journalists to interview a new type of source – the database. This requires interdisciplinary skills and competences. Obviously, journalistic intuition, the need to provide context, to investigate very well, and to check different sources are still necessary, but the technique required to work with a database is different.

Data journalism allows journalists to not be held hostage to ready-made analyses that come from press offices. It also enables them to understand how data is produced and how it should be processed. These are very relevant skills in the current context, in which data production and availability are growing exponentially.

I.S.O._ What is the relevance of data journalism in the current scenario of disinformation?

N.M._ Disinformation flourishes in environments of low trust in institutions. To understand whether data journalism can contribute to a healthier information ecosystem, we must ask ourselves whether it can help restore confidence in journalism in general. I believe so, for two reasons. Good data journalism brings greater transparency of sources and analysis methods in its practice. Also, it is not limited to reproducing official discourses, since it manages to go beyond ready-made analyses.

A second point is the growing sophistication of Artificial Intelligence (AI). There are more and more possibilities to produce synthetic voice, photographs, figures, and human avatars with a high degree of conviction. Deepfakes are an example of this. It is already possible to create videos from using AI that creates speeches and reproduces public figures. With technologies like these getting



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"Open data is often used as the raw material for data journalism. Based on open data, journalists are able to make their own analyses, question politicians, civil servants, and officials who are somehow responsible for this data, which is very important."

better and closer to us, how can we fight disinformation? Journalists need to incorporate advanced techniques for using technology in investigation and understand how technology can be applied to produce misleading information. Data journalists are already halfway there. And they will have to know how to create (or at least guide the creation of) automated monitoring and classification tools that allow them to work in this ecosystem of disinformation that has been expanding and becoming more sophisticated. For this purpose, journalists will also need to develop techniques and practices.

I.S.O._ How can the use of open data contribute to fighting disinformation?

N.M._ Data journalists question numbers, but they do not create them. It is possible to work on data collection techniques and generate new data, especially when they are not available. But it is more common for data of public interest to have public agencies as primary producers. Journalists must have a critical eye in relation to this data so that the quality remains high.

When we talk about open data, we are referring to data available for use, modification and distribution, and that is especially relevant for this scrutiny. Open data is often used as the raw material for data journalism. Based on open data, journalists are able to make their own analyses, question politicians, civil servants, and officials who are somehow responsible for this data, which is very important. Without open data, we are unable to ascertain whether the figures published in official statistics are in fact consistent with reality.

I.S.O._ How can collaborative initiatives between different actors promote the dissemination of reliable data and information? What is the relevance of collaboration networks in face of the COVID-19 pandemic and the phenomenon of disinformation?

N.M._ We have such a high level of complexity in public debate today that we will only be able to deal with this situation through collaboration and networking. There are good examples that emerged from the challenges of working with data on the pandemic in Brazil. One of them is the coalition composed by media outlets to collect data on the health crisis, such as the number of hospitalizations and people who had the disease. This initiative was carried out because the agency that was supposed to centralize and disclose this data started to refuse to do so, which generated an information blackout on COVID-19 in Brazil. This situation was solved only because collaboration networks were created.

Another example is Brasil.IO,²⁰ which built a network of volunteers and worked together with newsrooms and the Oswaldo Cruz Foundation (Fiocruz) team. Therefore, to deal with data blackouts in crucial moments – such as pandemics –, it is necessary to work in networks. No actor of society will be able to

²⁰ Find out more: <https://brasil.io/home/>

deal alone with the kind of challenge that such a blackout represents. The example of these coalitions demonstrates the importance of creating networks – without them, we would not have information for a longer period of time. The more we explain and work with data in a way that they become understandable to the general public, the more we build networks that reduce the lack of data on some fronts, the more we will fill the information gap with good information, taking space from bad information. Disinformation will always circulate; there needs to be good information circulating at the same time to meet this challenge.

I.S.O._ How to think about disinformation in the context of people who are not connected to the Internet?

N.M._ The response to this challenge also involves the creation of networks and multipliers of good information. Where are these people? We need to think from the point of view of the territories, communities, and social groups in which the Internet is not present. If we consider rural areas – just as an example, because we also have urban areas that are not connected to the Internet either –, where do people gather? How do they get informed? Where does information circulate? The challenge is to build local networks where good information circulates. This includes the public administration, schools where teachers serve as a reference for information with scientific criteria. It also involves bringing high-quality journalism to these spaces, including in formats that do not necessarily rely on Internet mediation. In my opinion, to deal with this challenge considering the digital divide, it is necessary to think about how much we can work with the networks that already exist – whether education networks or local media networks, such as radios – or the type of technology available to these communities so that good information circulates there.

It is also necessary to remember that there are different levels of digital divide. A person may not have access to a data package or a broadband network, but have a mobile phone with a pre-paid plan that connects them for free to some social media, such as WhatsApp. So how do we make good information circulate in this platform?

It is important to make content producers aware of the challenges faced in several parts of the country in terms of lack of high-quality Internet. Since journalism is extremely concentrated in specific regions, journalists do not seem to think much about this. It is necessary to train them for that. Research shows that Brazil is a large news desert, with small pockets of information, small areas with a concentration of media outlets that produce good information. Journalism that intends to be national must face the challenge of the digital divide and think of new distribution channels to reach those spaces where there is no Internet.

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Article II



Debora Albu

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Media literacy and citizen empowerment: an approach to countering disinformation²¹

By Debora Albu²²

Introduction

The dissemination of false or misleading information is not a new tactic. It has been a common practice – especially in political arenas – from time immemorial. However, this phenomenon has evolved considerably as society embarks on the fourth industrial revolution, with disinformation in the digital sphere becoming increasingly difficult to identify, classify, and counteract. The COVID-19 pandemic also intensified this scenario and even generated a specific category, the disinfodemic, which is the subject of the first article in this publication (Posetti & Bontcheva, 2020).

In democracies, disinformation is a crucial factor for the loss of trust, which is a fundamental element for social cohesion. The deliberate sharing of false information is particularly troubling, since access to information is a form of empowerment for citizens, whose ability to engage in issues of public interest – from climate change to gender equality – depends on the factual knowledge they possess. Therefore, digital technologies such as social media play a crucial role in facilitating access to information and advocacy processes by stimulating citizen participation.

The negative consequences of disinformation have grabbed the attention of several attentive eyes – the public sector, academia, civil society and even platforms, which are understood by many as targets of accountability. Thus, it is worth recognizing what has been done by each of these actors (Digital Future Society, 2020) in the fight against disinformation. In the public sector, it is possible to observe initiatives from the Brazilian Legislative – such as Bill no. 2630/2020, known as “PL das *fake news*” (“Bill of fake news”)²³ – and from the Judiciary – such as a program to fight

²¹ This article is inspired by the report 'Dealing with Disinformation: Strategies for Digital Citizen Empowerment', published by the Digital Future Society initiative in partnership with the Institute for Technology and Society (ITS). The document is available in English and Spanish at: <https://digitalfuturesociety.com/report/dealing-with-disinformation/>

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²³ Find out more: <https://www.camara.leg.br/noticias/673694-projeto-do-senado-de-combate-a-noticias-falsas-chega-a-camara/>

disinformation during elections created by the Superior Electoral Court²⁴ –, which are committed to mitigating this problem. Social media platforms, in turn, have been developing multiple solutions such as changing their architecture/code to use Lessig's approach (1999, 2006), reducing the reach of fake news, changing algorithms, and tagging fallacious content. Such actions include even the review of their own governance, as shown by the creation of Facebook's Oversight Board,²⁵ which plays the role of an independent third party in judging content removals and guiding freedom of expression.

Academia, civil society, and media organizations, on the other hand, continue to act on the edge of the debate. Academia acts with qualified research²⁶ and the development of new methodologies to respond at the same speed as these campaigns are undertaken. Organized civil society acts based on advocacy, raising awareness about the harmful effects of disinformation for democracies, as well as in the development of media and information literacy tools (Wilson et al., 2013). Finally, traditional media had to reinvent itself and bring good journalism to those who consume the most disinformation, using both new formats and channels or by strengthening accessible fact-checking initiatives, often directly in private message applications.²⁷

There is no silver bullet to eliminate disinformation. Therefore, multi-sectoral participation is fundamental for gaining a holistic understanding of the issue and the needs of citizens. Each of these actors must develop different strategies that can contribute to effectively combating the problem. Many of these strategies have shown good results, reducing disinformation not only in terms of dissemination, but also in terms of consumption and regulation. However, we are dealing with a systemic phenomenon, which is the result of structural changes in the way we organize ourselves as a society. It is therefore crucial that the media literacy approach prevails in the long term in order to support the reduction of the negative impact of disinformation.

Thus, this article seeks to contribute to the discussion about media literacy as a tool for citizen empowerment. It is argued that this approach is effective in reducing the harmful effects of disinformation in the long term, since well-informed people are better able to fully exercise their rights and duties. The text starts with a discussion on the concept of media literacy based on the main existing international frameworks, then cases and tools that apply this approach are introduced and, lastly, final considerations related to media literacy for citizen empowerment are presented.

Each of these actors must develop different strategies that can contribute to effectively combating the problem. Many of these strategies have shown good results, reducing disinformation not only in terms of dissemination, but also in terms of consumption and regulation.

²⁴ Find out more: tse.jus.br/imprensa/noticias-tse/2020/Maio/programa-de-enfrentamento-a-desinformacao-com-foco-nas-eleicoes-2020-mobiliza-instituicoes

²⁵ Find out more: <https://oversightboard.com/>

²⁶ Find out more: <https://laut.org.br/ciencia-contaminada/>

²⁷ Find out more: <https://piaui.folha.uol.com.br/lupa/2020/08/04/chatbot-ifcn-lupa-covid-19/>

Disinformation has the potential to deepen distrust in institutions, resulting in weaker democracies and disempowered citizens, who are unable to define the direction of their own futures.

Disinformation as citizen disempowerment

Information is an essential tool for citizen empowerment and serves as the foundation of a robust democratic society. According to Article 19 of the Universal Declaration of Human Rights, the right to freedom of opinion and expression is a constituent of full citizenship and pinpoints the importance of access to information (United Nations [UN], 1948). For the past 60 years, activists, researchers, and decision-makers have been advocating access to information and the ability to share information to empower citizens all over the world. This is due to the power of information to mobilize, promote transparency, and stimulate the participation of citizens, active citizenship, lifelong learning, and social change. It is understood, for example, that information played a central role in national development processes in the 1960s – researchers at the time demonstrated how both information and communication contribute to the modernization of institutions in emerging economies.

The advent of social media platforms has been very positive for freedom of expression advocates around the world. These channels play an important role in raising collective awareness, as well as in translating it into action in the analog world. Large political mobilizations such as the Arab Spring, the Occupy Wall Street movement, and the protests of June 2013 in Brazil were largely coordinated using these platforms.

At the same time, many studies show that voters use social media as an information source when deciding which candidate to vote for, turning them into hotspots of political contention, automated social media account proliferation, and disinformation. A strong democracy requires high-quality news from an independent media, a pluralistic climate of opinion, and the ability to negotiate public consensus (Bradshaw & Howard, 2017). However, political actors are leveraging these spaces to manufacture consensus, manipulate public opinion, and subvert democratic processes, which can lead to the disempowerment of citizens.

In face of this context, social media channels can be considered both arenas for the democratic debate of ideas and freedom of assembly, but also for the development of consensus that is prone to the dissemination of disinformation thanks to their algorithmic infrastructure and business models. Without access to high-quality information about the political context, for example, citizens cannot make decisions based on a constructive process of creating their own opinions and desires after analyzing different points of view. Specially children and young people need to develop such skills when building their worldview (Cortesi et al., 2020). Disinformation has the potential to deepen distrust in institutions, resulting in weaker democracies and disempowered citizens, who are unable to define the direction of their own futures.

A 2019 survey by Mozilla Foundation²⁸ found that disinformation is one of the main concerns around the world – only 3% of 60,000 respondents said

²⁸ Available at: <https://foundation.mozilla.org/en/blog/7-interesting-things-we-learned-when-we-ask-world-about-misinformation-online/>

they were not concerned about it. The survey also showed that citizens feel powerless to take any individual action in combating disinformation. Only 15% of Internet users have the necessary tools to solve this issue, while almost all respondents place responsibility on platforms such as Facebook, Google, and YouTube, considering they are better equipped to address the issue. At the same time, 86% of all respondents cited media literacy as the most important tool to fight disinformation. But what is media literacy after all? How and by whom can it be implemented? There are different approaches and strategies, which will be explored below.

Conceptualizing media literacy

UNESCO'S FRAMEWORK: MEDIA AND INFORMATION LITERACY

The United Nations Educational, Scientific and Cultural Organization (UNESCO) has been working for decades to build global concepts and frameworks for education, alphabetization, and literacy, seeking the modifications and contextualization necessary for these strategies. In this sense, a deep understanding of the so-called “information society” and the great transformations resulting from this revolution is essential for the development of appropriate public policies for addressing this phenomenon.

The Grünwald Declaration, published by UNESCO in 1982, was the first document to recognize the relevance of the media and of its diffusion in society. In addition to valuing the role of communication and media as an instrument of active citizen participation, the declaration states that: “Political and educational systems need to recognize their obligations to promote in their citizens a critical understanding of the phenomena of communication.” (United Nations Educational, Scientific and Cultural Organization [UNESCO], 1982). This document recommends that governments offer media education programs focused on developing not only knowledge, but also skills and attitudes related to the consumption of information.

The conceptualization of media literacy is widely debated in academic literature, and the term “information literacy” was first used in 1974, in a report prepared by Paul Zurkowski, who was president of the Software and Information Industry Association (Dudziak, 2003). Since then, “literacy”, “alphabetization”, and “education” have been addressed in different ways, but covering a range of actions and capabilities related to information that may or may not be mediated by digital technologies.

Three decades later, UNESCO supported the creation of the Towards an Information Literate Society meeting, which resulted in the Prague Declaration.²⁹ This document proposes basic principles and recommendations for information literacy. The meeting, which took place in the “Internet era”, focused on the discussion of issues related to social, economic, and cultural inequalities caused by information disparity and lack of access to information and communication technologies (ICT). This declaration is pioneer in presenting how social inclusion, media literacy, and digital inclusion are closely linked to the development of more just and tolerant societies, where citizenship is fully exercised.

²⁹ Available at: <http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/PragueDeclaration.pdf>

(...) social inclusion, media literacy, and digital inclusion are closely linked to the development of more just and tolerant societies, where citizenship is fully exercised.

A fundamental element in the conceptualization of information literacy is the idea of lifelong learning, which was consolidated in the Alexandria Declaration³⁰ in 2005. This declaration, prepared at the High-Level Colloquium on Information Literacy and Lifelong Learning, states that:

Information Literacy lies at the core of lifelong learning. It empowers people in all walks of life to seek, evaluate, use and create information effectively to achieve their personal, social, occupational and educational goals. It is a basic human right in a digital world and promotes social inclusion of all nations. (Garner, 2006, p. 3)

The evolution of ICT in the last two decades, especially with the rise of social media and content production facilitated by any Internet user, has brought about the need to refine the concept of information literacy (Wilson et al., 2013). In this scenario, the concept of Media and Information Literacy (MIL) emerged, combining media literacy and information literacy. By creating this concept, UNESCO brings together an ecosystem of skills, competences, and knowledge that are necessary for the full exercise of citizenship, freedom of expression, and citizen empowerment:

On the one hand, information literacy emphasizes the importance of accessing information and evaluating the ethical use of that information. On the other hand, media literacy emphasizes the ability to understand media functions, to assess how these functions are performed, and to rationally engage with the media for self-expression. (Wilson et al., 2013, p. 18)

MIL is understood as a more comprehensive and adequate approach to the current scenario for several reasons. First, by encompassing competencies from both the information and media fields, MIL supports the rapid evolution of ICT, which are crucial for the consumption, production, and dissemination of information. Secondly, MIL encourages critical thinking (Frau-Meigs & Torrent, 2009) and the development of tools for content curation, fact-checking, and reflection on information, which are essential skills to better navigate the information ecosystem, undermined by disinformation (Albu et al., 2019). Lastly, since it is based on fundamental rights such as freedom of expression and opinion, MIL is a powerful path in the formation of empowered citizens who are aware of their duties (Gasser et al., 2012).

CHALLENGES FOR IMPLEMENTING MEDIA LITERACY

One of the main challenges for implementing media literacy as an approach for citizen empowerment and for fighting disinformation is the digital divide. Access to ICT becomes a *sine qua non* condition for the development of skills related to media, information, and digital literacy, given that information systems are increasingly ubiquitous and based on these technologies. Therefore, it is necessary to consider access to connected devices as well as to the Internet. Although there

³⁰ Available at: <http://eprints.rcis.org/3829/1/alexfinalreport.pdf>

are 5.2 billion mobile subscribers worldwide,³¹ regional, national, economic, and social differences are significant, which sheds light on the dimension of digital inclusion. Gender, race, and class differences are also relevant and mark such disparities (Alliance for Affordable Internet [A4AI], 2020). In Brazil, there is more than one mobile device per inhabitant (234 million in total), but again it is necessary to observe the distribution, which follows patterns of inequality.³²

Regarding the Internet access indicator, the global absolute numbers are less promising – just over 50% of the population uses the Internet.³³ The disparity of access by region is high, and the difference between urban and rural areas is the most significant. Without access to devices or to the Internet, it is not possible to fully develop knowledge, skills, and attitudes in the context of the MIL approach, especially for children and adolescents (Livingstone et al., 2017).

Another challenge is the actual implementation of this approach as a public policy. This often means the reformulation of guidelines and curricula, which need to be approved by the different powers and then implemented. Budget forecasting can be restricted or inadequate, and its capillarization at the state and municipal levels often presents barriers. The training of teachers in these competencies and in the curricula for the application of MIL to the student body must also be foreseen and incorporated (Grizzle, 2016).

Finally, there is the challenge of regulation, especially considering the use of media literacy to combat disinformation. A study carried out by Leal and Lunes (2020) analyzed all legislation in progress in the Brazilian National Congress until the beginning of 2020 that were related to fighting disinformation, with the objective of understanding which approaches are listed in these bills. Of the 59 projects examined by the authors, only 12% have an educational perspective, reinforcing the use of MIL. In general, the projects have few specifics regarding the implementation of this approach, addressing either digital literacy or media literacy, but not in a holistic manner.

Despite these issues, promoting media literacy has been the main strategy employed by a wide range of stakeholders, from public authorities to civil society organizations. Furthermore, governments are realizing that it is not sufficient to rely on regulation to deal with the specific problem of disinformation. A UK parliamentary report on the subject states that the legal duty of the Secretariat of Communications is to promote media literacy, describing it as “a fourth pillar of education, alongside reading, writing, and mathematics”.³⁴ Media literacy programs have been launched or supported by the governments of United Kingdom³⁵ and Indonesia,³⁶ and countries such as Canada,³⁷ Finland,³⁸ and Australia³⁹ have already incorporated digital literacy in their national curricula.

One of the main challenges for implementing media literacy as an approach for citizen empowerment and for fighting disinformation is the digital divide.

³¹ Find out more: https://www.gsma.com/mobileeconomy/wpcontent/uploads/2020/03/GSMA_MobileEconomy2020_Global.pdf

³² Find out more: <https://eaesp.fgv.br/sites/eaesp.fgv.br/files/u68/fgvicia2021pesti-relatorio.pdf>

³³ Find out more: <https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>

³⁴ Available at: <https://publications.parliament.uk/pa/cm201719/cmselect/cmcomeds/1791/1791.pdf>

³⁵ Find out more: <https://www.bbc.com/news/uk-politics-42791218>

³⁶ Find out more: <https://www.siberkreasi.id>

³⁷ Find out more: <https://mediasmarts.ca/sites/default/files/pdfs/publication-report/full/digitalliteracypaper.pdf>

³⁸ Find out more: <https://www.literacyworldwide.org/blog/literacy-now/2015/08/28/digital-literacies-in-the-new-finnish-national-core-curriculum>

³⁹ Find out more: <https://www.australiancurriculum.edu.au/media/3652/literacy-digital-technologies.pdf>

CASES AND TOOLS OF INTEREST

To illustrate practical ways of implementing media literacy in combating disinformation, projects and tools developed by civil society organizations and researchers immersed in this subject are listed below.

The Pegabot Project,⁴⁰ from the Institute for Technology and Society (ITS), aims to foster transparency on the use of automated behavior on social media, promoting a culture of media literacy. One of its axes includes a tool that identifies the probability of a certain profile on Twitter being a robot, in order to help users understand how these profiles work and decide on the type of information they want to consume. Moreover, the project aims to train journalists and civil organizations on disinformation and the skills provided for in MIL. It is a way of “gamifying” media literacy and making learning more palatable.

Another interesting tool is fact-checking chatbots. These automated mechanisms often work on social media or private messaging applications and help users to verify information or learn to access news without having to switch platforms. This is the case of a chatbot developed by the International Fact-Checking Network (IFCN) to refute false information about the COVID-19 pandemic.⁴¹ The tool is available in four languages, including English, Hindi, Portuguese, and Spanish, and has proven to be a successful way of mitigating the dissemination of untruths about the new coronavirus, especially given the required social isolation.

Final considerations

Over the past few decades, the concept of media literacy has evolved significantly and started to encompass the complexities arising from the transformation of the information ecosystem. Therefore, describing media and information literacy as a set of knowledge, skills, and attitudes for both information and the medium/media that supports it is a more interesting and complete approach compared to the previous ones, which did not take into consideration the relevance of ICT to society. The phenomenon of disinformation, which is inherent to any information system, remains a challenge, despite the multiple ways of fighting it.

Multisectoral coordination among public entities, private sector, civil society, academia, and the press is necessary to scale up solutions that perform better and ensure a lifelong learning process. Also important are critical competencies for the consumption, production, and dissemination of information. A systemic and holistic view must be applied to media and information literacy as the main structure to combat disinformation and as a foundation for citizen empowerment.

⁴⁰ Find out more: www.pegabot.com.br

⁴¹ Find out more: <https://piaui.folha.uol.com.br/lupa/2020/08/04/chatbot-ifcn-lupa-covid-19/>

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Interview II



Gilberto Scofield Jr.
Marketing and
Relationship
Director at
Agência Lupa.

Fact-checking and media literacy for countering disinformation

Gilberto Scofield Jr. is the marketing and relationship director at Agência Lupa, a platform that uses fact-checking and media literacy to raise awareness about disinformation and its risks. In this interview, he addresses what fact-checking is, how this practice has emerged, and the possible ways to fight disinformation.

Internet Sectoral Overview (I.S.O.)_ What is fact-checking and how did this activity emerge in Brazil?

Gilberto Scofield Jr. (G.S.)_ Fact-checking as a journalism practice is not something new. In the past, there was a person in the content production process who was in charge of checking interviewees' statements prior to printing. With the crisis in the journalism industry, these professionals were dismissed. The practice of checking facts emerged in the 1990s, in US elections. In 1991, journalist Brooks Jackson created a team at CNN called "ad police" to inspect partisan and political advertising and check what was true or false. This practice gradually expanded to journalism in general. This is classic fact-checking, where statements of sources are checked. There is another variant, called debunking, where everything that has no authorship and is disseminated on social media, for example, is checked. Verification, on the other hand, relates to checking digital content such as videos, which is crucial in the context of deepfakes. In 2007, a journalist from Tampa Bay Times, Bill Adair, founded PolitiFact, a platform for checking and studying disinformation. Two years later, this initiative won the Pulitzer Prize – an important recognition in the field of Journalism – for its work in checking candidate statements during the 2008 US presidential elections. In 2010, Argentina opened its first fact-checking company, called Chequeado. In Brazil, this matter had not been discussed until 2014. Agência Lupa was founded in November of the following year. It is important to clarify that fact-checking is not opinion-checking, nor is it used for broad trends or concepts. It is only possible to check the degree of veracity of contents for which there are historical data, statistics, comparisons, and information about the legality of the facts. Therefore, it is only possible to check information that has a verifiable database.

I.S.O._ In the current scenario of rapid information dissemination, which initiatives are important in fighting disinformation?

G.S._ Disinformation has always existed, but not in the current speed and context of algorithmic mediation. We entered the era of interactions mediated by algo-

rithms, and now we have numerous social media platforms that produce data which are very easy to analyze. On today's Internet, it is possible to choose groups according to the platform and to deliver to them exactly what they want to hear. A disinformation industry has been created and it shapes the content to be distributed.

In 2020, we worked to deliver new formats for fact-checking with the objective of reaching people who do not realize that contents are fake just by reading them. On Facebook, for example, it is possible to report fake news and, when this happens, Facebook sends the content to us for fact-checking. If the information is fake, Facebook takes two actions: an alert pops up on the screen whenever someone tries to share the post, warning that the content was considered fake by Agência Lupa, and it changes the algorithm, that is, fewer people will see that fake content. It is an opportunity for us to reduce the impact of disinformation.

Is fact-checking enough? No, because the speed of fact-checking and of disinformation are not the same. Therefore, we understand that digital and media literacy is a very powerful tool. It takes more time, but it has a greater long-term effect, since pure and simple fact-checking is not always convincing or the best solution. In 2019 and 2020, for example, we trained all Brazilian Regional Electoral Courts to defend their institutions against disinformation. It is necessary that everyone understands how dangerous disinformation is.

Education is also important for readers to be aware of the existing formulas used to produce disinformation, such as creation of narratives, photographs that are out of context, titles that do not match the text, and the use of emotional appeals. People need to be more critical of the content they consume.

I.S.O._ How can we think of strategies to deal with disinformation in the context of people who are not yet connected to the Internet?

G.S._ That's a difficult question. Disinformation is a social phenomenon that includes a lot more than journalists. It is a problem that affects society, governments, and platforms. It is not possible to discuss a bill in the National Congress without the presence of all social media platforms, for example. Disinformation is everyone's problem, not only of those in charge of fact-checking.

Agência Lupa has a project with Google in which we take content about disinformation related to COVID-19 vaccination to "news deserts", that is, to places that are not covered by traditional media or good-quality Internet. There are many regions like these in Brazil. In such cases, we use community and university radios, whose penetration is much greater than that of TV and printed newspapers. We also work with hyperlocal influencers to spread information about vaccines, such as community health workers who instruct families in the areas where they live. They are very precious people for communication, especially for reversing disinformation. These are some of the solutions we have found to fight fake content, and they can be replicated.

"Is fact-checking enough? No, because the speed of fact-checking and of disinformation are not the same. Therefore, we understand that digital and media literacy is a very powerful tool."

Domain Report

Domain registration dynamics in Brazil and around the world

The Regional Center for Studies on the Development of the Information Society (Cetic.br), department of the Brazilian Network Information Center (NIC.br), carries out monthly monitoring of the number of country code top-level domains (ccTLD) registered in countries that are part of the Organisation for Economic Co-operation and Development (OECD) and the G20.⁴² Considering members from both blocs, the 20 nations with highest activity sum more than 89.38 million registrations. In August 2021, domains registered under .de (Germany) reached 17.03 million, followed by China (.cn), the United Kingdom (.uk) and Netherlands (.nl), with 9.89 million, 9.70 million and 6.20 million registrations, respectively. Brazil had 4.84 million registrations under .br, occupying 6th place on the list, as shown in Table 1.⁴³

Table 1 – TOTAL REGISTRATION OF DOMAIN NAMES AMONG OECD AND G20 COUNTRIES

Position	Countries	Number of domains	Date of reference	Source (website)
1	Germany (.de)	17,031,430	31/08/2021	https://www.denic.de
2	China (.cn)	9,895,904	31/08/2021	https://research.domaintools.com/statistics/tld-counts/
3	United Kingdom (.uk)	9,703,171	01/06/2021	https://www.nominet.uk/news/reports-statistics/uk-register-statistics-2021/
4	Netherlands (.nl)	6,208,410	31/08/2021	https://api.sidn.nl/rest/counters/domains
5	Russia (.ru)	4,966,591	31/08/2021	https://cctld.ru
6	Brazil (.br)	4,847,606	31/08/2021	https://registro.br/dominio/estatisticas/
7	France (.fr)	3,822,701	31/08/2021	https://www.afnic.fr/en/observatory-and-resources/statistics/
8	European Union (.eu)	3,660,944	31/08/2021	https://research.domaintools.com/statistics/tld-counts/
9	Italy (.it)	3,426,721	31/08/2021	http://nic.it
10	Australia (.au)	3,372,054	31/08/2021	https://www.auda.org.au/
11	Colombia (.co)	3,195,734	31/08/2021	https://research.domaintools.com/statistics/tld-counts/
12	Canada (.ca)	3,169,057	31/08/2021	https://www.cira.ca
13	India (.in)	2,560,134	31/08/2021	https://research.domaintools.com/statistics/tld-counts/
14	Poland (.pl)	2,504,556	31/08/2021	https://www.dns.pl/en/
15	Switzerland (.ch)	2,434,386	15/08/2021	https://www.nic.ch/statistics-data/domains_ch_monthly.csv
16	Spain (.es)	1,974,732	02/08/2021	https://www.dominios.es/dominios/en
17	Belgium (.be)	1,731,955	31/08/2021	https://www.dnsbelgium.be/en
18	United States (.us)	1,703,790	31/08/2021	https://research.domaintools.com/statistics/tld-counts/
19	Japan (.jp)	1,652,033	01/08/2021	https://jprs.co.jp/en/stat/
20	Sweden (.se)	1,520,143	31/08/2021	https://internetstiftelsen.se/en/domain-statistics/growth-se/?chart=active

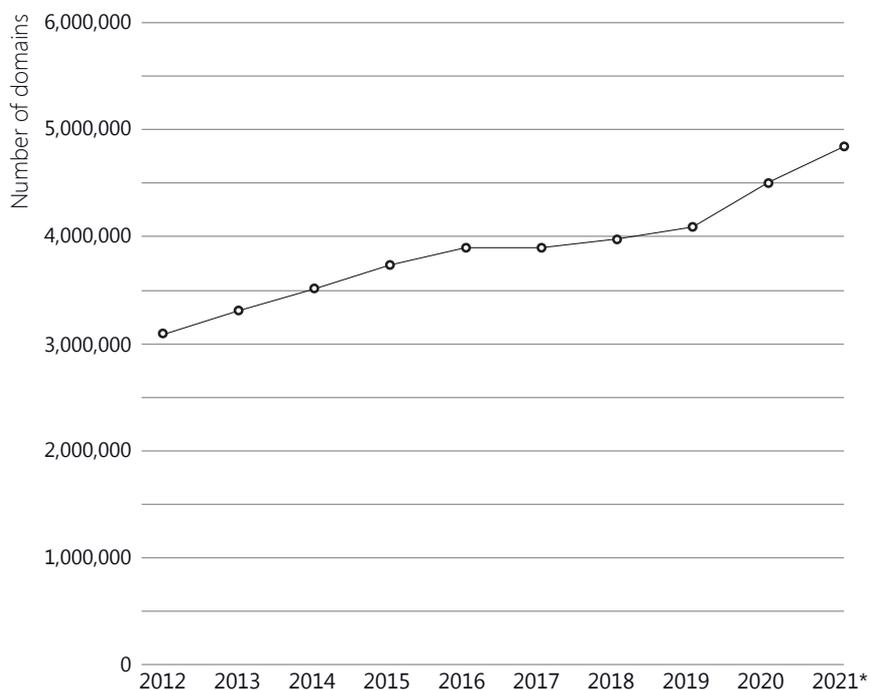
Collection date: August 31, 2021.

⁴² Group composed by the 19 largest economies in the world and the European Union. More information available at: <https://g20.org/>

⁴³ The table presents the number of ccTLD domains according to the indicated sources. The figures correspond to the record published by each country, considering members from the OECD and G20. For countries that do not provide official statistics supplied by the domain name registration authority, the figures were obtained from: <https://research.domaintools.com/statistics/tld-counts/>. It is important to note that there are variations among the date of reference, although the most up-to-date data for each country is compiled. The comparative analysis for domain name performance should also consider the different management models for ccTLD registration. In addition, when observing rankings, it is important to consider the diversity of existing business models.

Graph 1 shows the performance of .br since 2012.

Graph 1 – TOTAL NUMBER OF DOMAIN REGISTRATIONS FOR .BR – 2012 to 2021*



*Collection date: August 31, 2021.

Source: Registro.br

Retrieved from: <https://registro.br/dominio/estatisticas/>

In August 2021, the five generic Top-Level Domains (gTLD) totaled more than 187.65 million registrations. With 156.81 million registrations, .com ranked first, as shown in Table 2.

Table 2 – TOTAL NUMBER OF DOMAINS AMONG MAIN gTLD

Position	gTLD	Number of domains
1	.com	156,811,267
2	.net	13,333,924
3	.org	10,471,327
4	.info	3,861,288
5	.xyz	3,181,565

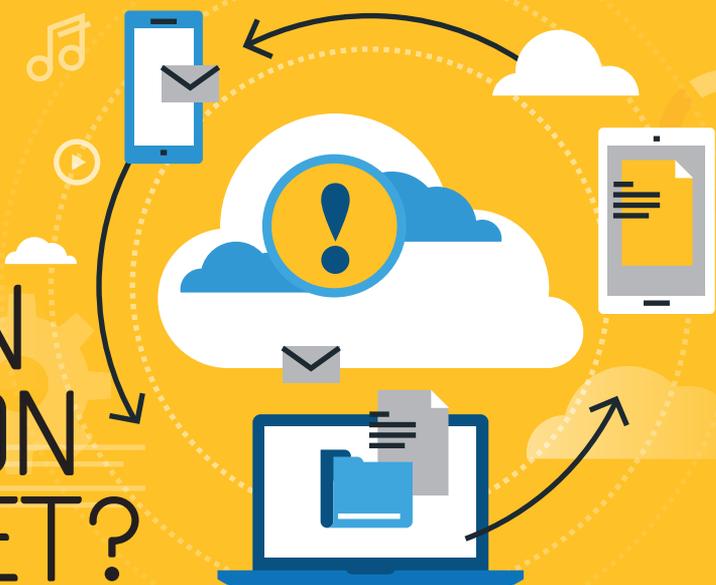
Collection date: August 31, 2021.

Source: DomainTools.com

Retrieved from: research.domaintools.com/statistics/tld-counts

/Answers to your questions

HOW DOES INFORMATION CIRCULATE ON THE INTERNET?



In the context of the COVID-19 pandemic, the Internet has been especially important for communication, as well as for seeking and sharing guidance, references, and news. See the data⁴⁴ below about how Internet users⁴⁵ in Brazil (81%) communicated and accessed information on the Web in 2020.

COMMUNICATION AND SHARING

Total number of Internet users (%)



ACCESS TO INFORMATION

Total number of Internet users (%)



The Brazilian Network Information Center (NIC.br) and the Brazilian Internet Steering Committee (CGI.br) have informative materials, in Portuguese, related to disinformation, such as:

INTERNET SECURITY BOOKLET: RUMORS FASCICLE (2020):

cartilha.cert.br/fasciculos/#boatos



INTERNET, DEMOCRACY AND ELECTIONS: PRACTICAL GUIDE FOR PUBLIC MANAGERS AND USERS (2018):

nic.br/publicacao/guia-internet-democracia-e-eleicoes



• **SECURE INTERNET PORTAL:**

<https://internetsegura.br/>

• **CITIZEN ON THE NET PORTAL:**

<https://cidadonaarede.nic.br/>

⁴⁴ Data from the ICT Household survey (COVID-19 edition – adapted methodology), by Cetic.br|NIC.br. Find out more: <https://cetic.br/pt/pesquisa/domicilios/>

⁴⁵ Internet users are individuals who used the Internet at least once in the three months prior to the interview, according to the methodological recommendation of the International Telecommunication Union (ITU).

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