Disinformation in Brazil during the Covid-19 pandemic: topics, platforms, and actors

A desinformação no Brasil durante a pandemia de Covid-19: temas, plataformas e atores

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ABSTRACT

This paper presents the main topics, platforms, and actors involved in the spread of disinformation surrounding Covid-19 in Brazil. We have analyzed 407 texts classified as false by fact-checking agencies from the collaborative platform *Latam Chequea Coronavirus*. The selected corpus contains content published between March 15th and July 21st, 2020. Analysis of this content has shown that the most frequent topic is politics (25.55%), followed by cures (20.64%), data (19.66%), and contagion (18.43%). Our qualitative analysis of 300 texts has shown that most of the narratives support President Jair Bolsonaro's beliefs and opinions about the pandemic. Almost half of the cases (48.34%) use false context as a strategy, with real facts or images being removed from their original context. The actors who repeatedly spread disinformation in social media are also in the president's circle. There were 60 texts that contained actors who have the potential to spread false content; federal deputy Osmar Terra himself was a central figure alongside Bolsonaro and his children. Our study also shows that this disinformation often circulates on Facebook and WhatsApp, sometimes on both, as well as on other social media networks. Texts and images are the standard formats through which this occurs.

Keywords: journalism; disinformation; Covid-19

RESUMO

Este artigo apresenta os principais temas, plataformas e atores envolvidos na disseminação de desinformação sobre a Covid-19 no Brasil. Analisamos 407 textos classificados como falsos pelas agências de fact-checking que integram a plataforma colaborativa *Latam Chequea Coronavirus*. O corpus se refere ao início da pandemia, e por isso inclui conteúdos publicados de 15 de março a 21 de julho de 2020. Por meio de análise de conteúdo, descobrimos que o tópico mais frequente é a política (25,55%), seguido de cura (20,64%), dados (19,66%) e contágio (18,43%). Em relação aos sentidos das publicações, obtidos por meio de análise qualitativa de 300 textos, identificamos que as principais narrativas buscam favorecer o presidente Jair Bolsonaro e suas convicções a respeito da pandemia. Praticamente a metade dos casos (48,34%) utiliza, como estratégia, a produção de falso contexto, quando uma imagem genuína ou um fato verdadeiro é deslocado de seu contexto original para gerar uma inverdade. Também estão no entorno do presidente os atores que com frequência espalham desinformação sobre a pandemia nas redes sociais digitais. Em 60 textos nos quais foi possível identificar os atores com potencial de ampliar a profusão de conteúdo falso, o deputado federal Osmar Terra se apresenta como uma figura central, ao lado de Bolsonaro e seus filhos. Nosso levantamento ainda mostra que a desinformação circula principalmente no Facebook e no WhatsApp, muitas vezes simultaneamente nesses espaços e em outras redes sociais. Texto e imagem são os formatos mais recorrentes.

Palavras-chave: jornalismo; desinformação; Covid-19

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Introduction

The Covid-19 pandemic creates an environment conducive to the spread of disinformation, especially in countries whose governments underestimate the impact of the disease, disregard social distancing, and encourage the use of pharmaceuticals which have not been proven to be effective. Platforms, digital social networks, and messaging applications play an essential role in this context, mainly due to the interactions and algorithmic recommendations in these spaces, added to the reinforcement of their own beliefs.

To comprehend this phenomenon in Brazil, the main goal of this research is to identify and describe the most frequent topics among the fake content related to the pandemic and recognize the formats applied in the production of these kinds of content. We also aim to map the platforms in which the false content circulates and detect the agents involved in potentializing the reach of these publications.

The set of methods used in this study comprehends two significant stages: the quantitative is connected to data gathering, and the qualitative goes more profound in the subjects encountered. We analyzed 407 fact-checked texts on Covid-19 considered false, published from March 15th to July 21st, 2020, in the database *Latam Chequea Coronavirus database*[1], a collaborative platform created by fact-checking agencies in Latin America, including work from the following Brazilian agencies: Agência Lupa, Agência Aos Fatos, Estadão Verifica and Agência France-Presse (AFP).

This article mostly dialogues with studies on disinformation in the pandemic from authors such as Brennen *et al.* (2020), Fernandes *et al.* (2020), Goulart and Muñoz (2020), Machado *et al.* (2020a; 2020b), Malinvern and Brigagão (2020), Pereira and Prates (2020), Posetti and Bontcheva (2020), Recuero and Soares (2020), Sacramento *et al.* (2020), Soares *et al.* (2020) and Teixeira and Martins (2020), among others. It is not our intention to establish a broad view of journalism regarding the pandemic. Such results could only be achieved after a long process of research development.

Below, we present a brief discussion on disinformation and the methodological procedures and results obtained from the analysis of the topics, the actors, and the platforms that constitute this phenomenon.

Disinformation and Verification

First detected in China in late 2019, the Sars-Cov-2 virus, the cause of Covid-19, has been the subject of widespread disinformation since its appearance. The production of false content on the disease in the form of conspiracy theories, rumors, and advice circulates mainly on digital social networks and messaging applications, the source of which is difficult to trace. In general, this false content rejects scientific facts and appeals to the emotions that stimulate recommendation algorithms and cause users to develop their own beliefs. This type of content mimics journalism and tries to represent itself as a qualified mediator of reality by distorting numbers, manipulating sources, and using resources similar to those employed in the news such as headlines, texts, and photos.

According to the *Digital News Report* (Newman *et al.*, 2020), 87% of the population of Brazil indicated online sources (including news sites and digital social networks) as their main source of obtaining information. Disinformation gains space in this scenario due to little being known about the effects of interactions between algorithms and humans, even generating content customization, and due to the difficulty of hierarchizing information since news sites are no longer the main form for accessing news (Barsotti, 2018).

We use the term disinformation[2] in this article to address the spread of false content, usually created to defame the reputation of people and institutions. The phenomenon of disinformation presupposes an environment of distrust and confusion and, therefore, the producers of such content encourage disbelief in the press, politicians, and digital platforms (Nielsen and Graves, 2017). This intention to deceive is at the very heart of the created information (Lazer *et al.*, 2018), which mainly seeks to obtain financial or ideological advantages (Tandoc Jr. *et al.*, 2018).

We avoid using the term *fake news* because it has been widely used by politicians to attack the credibility of the press, and because it is a paradox since the news is, by definition, based on facts (Tandoc Jr. *et al*, 2018).

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[1] Available at: https://chequeado.com/latamcoronavirusportugues/
[2] Wardle; Derakhshan, 2017 describe two other classifications of the term *disinformation*: *misinformation*, linked to false or incorrect information that is communicated unintentionally, as with journalistic errors; and *malinformation*, which is genuine information that is spread to harm someone.

We recognize, however, that the term has been used in studies in the political field and is classified as part of disinformation. "What has come to be known as fake news is a type of untrue or distorted information that simulates news - or newness - to narrate political facts and thus gain greater visibility on social media platforms"[3] (Dourado, 2020, p. 54). The author notes that the idea of "news" is a condition for this particular form of fraud, which seeks to imitate the urgent character generally used in journalism. They are productions presented as "[...] stories that are presumably factual, but proven to be false, produced with the intent to distribute them as breaking news across digital environments"[4] (Dourado, 2020, p. 58).

We also must consider that the public may hold a different view of what disinformation is. When analyzing the results of eight focus groups conducted in the United States, the United Kingdom, Spain and Finland, Nielsen and Graves (2017) found that the public perceives *fake news* in a broader sense, attributing bad journalism, political propaganda, and some types of advertising to this category. For the public, this misinformation is not only represented by content that imitates the news. Egelhofer *et al.* (2020) report the overuse of the term, which originally was used to describe something incorrect, polemic, or controversial.

Although verification is one of the mainstays of journalism as a qualified mediator (Kovach and Rosenstiel, 2001; Reginato, 2019), it is fact-checking that critically analyzes what public personalities say. In the United States, where this type of activity was occasionally observed in the early 1990s with CNN journalist Brooks Jackson[5] and his form of investigative journalism, fact-checking is understood as a journalistic genre that investigates the truthfulness of public statements (Amazeen, 2015; Graves, 2018). It does not concern the verification and confirmation work carried out before publication; it is a measure taken after a public statement has been made.

Although it moves through politics (with public actors and personalities) and academics (in relation to methods), fact-checking is mostly particularly to journalism (Graves, 2018). It holds values which are cherished in journalism, such as methodological objectivity and transparency so as to contextualize verification procedures to readers. Transparency is a normative principle of this fact-checking (Seibt, 2019) and materializes when labelling information as true, false, having other nuances and distortions, or when it discloses sources.

Fact-checking proves to be particularly important for elections, such as in 2016 and 2020 in the United States, and 2018 in Brazil, when there was a significant amount of disinformation being spread across digital social networks. It has also proved fundamental with the arrival and advancement of the Covid-19 pandemic in 2020. It is one of the tools used to combat false content and replace it with reliable and contextualized information, but it is obviously not enough alone to solve the problem. In order to take on the disinformation ecosystem it needs to work with other practices like prioritizing verified and reliable content on digital platforms at the expense of fraudulent content, generating a ranking of information reliability (Pennycook and Rand, 2018) and media literacy initiatives.

There are other areas of public discourse outside of politics that are frequent targets of disinformation, including health. The Covid-19 pandemic is surrounded by uncertainties, especially in its initial stages. The disease is caused by a new virus (Sars-Cov-2), first identified in Wuhan, in the Hubei province of China, in late 2019. According to the World Health Organization (WHO)[6], the most common symptoms are fever, dry cough, and fatigue. There are reports of loss of smell and taste, in addition to other systemic and prolonged effects. In severe cases, it can cause death.

Due to its high transmission levels and the fact it has spread throughout the world, it requires strict political and sanitary measures such as the use of masks, social distancing, and even the total shutdown of non-essential public places. These measures have serious economic impacts and in turn require the state to protect those who are most vulnerable. The pandemic has also highlighted how important science is for treating patients, producing reliable tests and manufacturing

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[3] Originally in Portuguese: "O que se convencionou fake news são um tipo de informação inverídica ou distorcida que simula uma notícia - ou novidade - para narrar fatos políticos e assim conquistar maior visibilidade no trânsito entre plataformas de mídias sociais."
[4] Originally in Portuguese: "[...] histórias presumidamente factuais, porém comprovadamente falsas, produzidas com a intenção de serem distribuídas como notícias de última hora nos ambientes digitais."
[5] In 1991, CNN's Brooks Jackson, based in Washington D.C. (USA), was tasked with verifying the presidential candidates' speech, revealed in his writings on the election campaign. Later, in 2003, he founded the first independent fact-checking website: Fact-Check.org. Details available at: https://piaui.folha.uol.com.br/lupa/2015/10/15/de-onde-vem-o-fact-checking/
[6] Available at: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public

vaccines. Furthermore, it is a phenomenon that radically affects people as death is a very real possibility.

It is a scenario which is highly conducive to disinformation, to the politicization of a health crisis, to triggering common sense beliefs, and to spreading rumors. Due to the complexity of the pandemic, fact-checking agencies have also needed to perform *debunking*; the process of verifying and denying rumors (Wardle and Derakshan, 2017), which in many cases are accompanied by manipulated and defamatory visual content. Professional journalism plays a significant role in Covid-19 coverage once it pursues the truth and is based on verification (especially regarding the use of reliable news sources) and the availability of qualified information (Kovach; Rosenstiel, 2001; Reginato, 2019).

Three institutions in Brazil have been accredited and now work in conjunction with the *International Fact-Checking Network* (IFCN) as of January 2021: *Agência Lupa*, *Aos Fatos* and *Estadão Verifica*. The French fact-checking agency *Agence France-Presse* (AFP), included in this corpus, was registered in France. Since combating Covid-19 requires collective efforts, the *Latam Chequea Coronavirus*[7] project represents a growing practice of journalistic companies during the pandemic: collaboration through the formation of consortia, in order to expand the regional or global impact on the distribution of qualified information. The platform used as the basis for this research brings together 34 organizations from 17 Ibero-American countries, and is coordinated by Chequeado, Argentina. Its international version is hosted on the *International Fact-Checking Network* (IFCN) website[8]. Every citizen can consult these databases to access verified information about the pandemic in their own region and elsewhere in the world. This work of popularizing verified information is essential to combat disinformation and misinformation, and that is why it is used in this study.

Methodological Procedures

The questions we offer in this research are 1) what topics are being discussed the most and in which format; 2) across which platforms or digital social networks is disinformation spread and; 3) who are the main actors involved in the spread of this disinformation? To address these inquiries and describe the phenomenon of disinformation connected to Covid-19, we combined qualitative and quantitative methodological approaches, close to mixed-methods research (Gil, 2019), but mainly through Content Analysis. To summarize, the set of methods applied to it involve a quantitative and a qualitative stage. The first was required to identify and gather the data, while the second was needed to go deeper into the disinformation strategies used.

We chose the *Latam Chequea Coronavirus* project database and identified the first four months of fact-checking as our time frame. This network of fact-checkers, which united to face the disinformation about Covid-19 in Latin America, examined a total of 607 texts published in Brazil from March 15 to July 21, 2020. *Aos Fatos*[9], *Lupa*[10], *Estadão Verifica*[11] and *Agência France-Presse*[12] were the agencies responsible for verifying information in the country. Fact-checking services in Latin America come under the *International Fact-checking Network* (IFCN) project. The aforementioned agencies are signatories to this network, which analyzes information related to the pandemic circulating around the world. Downloading the information, eliminating duplicate lines, and grouping news which had been verified by more than one agency gave us a corpus of 407 cases which had been identified as false by the agencies.

The *Latam Chequea Coronavirus* database originally provides information such as the title, the description of the content that contextualizes the disinformation, the date of publication, classification, the organization which performed the fact-checking, a hyperlink to the agency's

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[7] Available at https://chequeado.com/latamcoronavirusportugues/
[8] Available at https://www.poynter.org/ifcn-covid-19-misinformation/
[9] *Aos Fatos* is a Brazilian fact-checking agency founded in July 2015, headquartered in Rio de Janeiro. It has 19 professionals on its team. In addition to fact-checking, it develops innovative products in journalism such as Radar Aos Fatos, which monitors the circulation of disinformation on digital social networks on topics such as Covid-19 and elections. Available at: https://www.aosfatos.org/
[10] The *Lupa* agency is a Brazilian fact-checking agency founded in November 2015. It is headquartered in Rio de Janeiro, has 16 professionals, and has an educational branch which promotes training in fact-checking and debunking: the LupaEducação. Available at: https://piaui.folha.uol.com.br/
[11] *Estadão Verifica* is the fact-checking hub for the *O Estado de S.Paulo* newspaper, based in São Paulo, and an IFCN signatory since January 2019. The team is made up of four professionals. Available at: https://politica.estadao.com.br/blogs/estadao-verifica/
[12] *AFP Checamos* is a blog from *Agence France-Presse* (AFP) created in June 2018. The team, located in Rio de Janeiro, has two journalists dedicated to verification. Available at: https://checamos.afp.com/list

website, the format of the disinformation unit and what its origin is, that is, if the content was circulated on messaging applications or digital social networks, and if so, on which ones. Any gaps were filled, when possible, from reading the texts. In general, it is difficult to trace the origin of the disinformation and to indicate the actor responsible for creating or increasing the number of accesses and interactions around a particular topic.

In order to analyze the topics in circulation we applied Content Analysis to the entire corpus (407 cases) and created categories based on Posetti and Bontcheva's (2020) description of the most recurrent types of disinformation on the pandemic: *China, contagion, cures, data, economics, politics, and others*. To understand the general meaning of the texts (Herscovitz, 2007), we performed a qualitative analysis of 300 cases (74% of the corpus) using the verifications from the *Lupa* and *Aos Fatos* agencies as criteria for composing this qualitative sample, adhering to the rules of representativeness and homogeneity (Bardin, 2004). According to Bardin (2004, p. 91, author's highlight), "The analysis may occur in a sample since the material leads to that way. The sample is considered rigorous if it is a significant part of the universe."[13] The rule of homogeneity means that the documents must "correspond to precise criteria of choice and do not present significant singularity outside these criteria"[14] (Bardin, 2004, p. 91). That is why we chose for the qualitative analysis only the false content verified by two agencies which core is fact-checking. Besides the most significant part in the selected corpus, both agencies were the first to check statements in Brazil according to IFCN's methodology. We were also interested in mapping the strategies used in the production of false content. To do so, we applied the following seven categories proposed by Wardle and Derakhshan (2017) and Wardle (2019) to our sample of 300 cases: fabricated content, manipulated content, impostor content, false context, misleading content, false connection, and satire.

In terms of the actors, we wanted to find out who was responsible for sharing false content. By merging the data from the fact-checking agencies to the 407 news items that corrected the units of disinformation, we identified 50 actors (individuals, companies or institutions) in 60 units

who disseminated a publication one or more times. This means that there was one disseminator for every seven news items, often from the political sphere. Public people often use their hierarchical position in networks to influence their followers. As Nordheim *et al.* (2018) remind us, social networks like Twitter are used strategically by politicians and celebrities who wish to speak directly to their audience and avoid the scrutiny of the press.

Lastly, in order to examine the platforms on which disinformation is disseminated we looked at information provided by the fact-checking agencies on the tools, websites, or digital social networks that the content has been spread on. We discovered disinformation about the pandemic on the following spaces, sometimes simultaneously: *Facebook, Twitter, YouTube, Instagram, Tik Tok, Telegram, WhatsApp*, blogs and websites, and even e-mail. At this point, we shall draw attention to a limitation with the corpus: there are a number of fact-checking agencies working in partnership[15] with *Facebook*, even before the pandemic, to verify unreliable content circulating on the social network. This could mean that the false content circulating on *Facebook* has received priority from the agencies and, therefore, appears in greater numbers. We understand, however, that this factor does not compromise the importance of our study, since Facebook is one of the main sources of information for Brazilians (Newman *et al.*, 2020). To conclude our analysis we shall briefly discuss what formats are commonly used to manufacture false content.

Topics and Types of Disinformation

The Topics

After a pre-analysis (Bardin, 2004) of the 407 collected cases, we identified the following seven main topics of disinformation content: China, contagion, cures, data, economics, politics, and "others". Our mapping (Table 1) shows that the most common type of disseminated content is politics, politicians and government actions

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[13] Originally in Portuguese: "A análise pode efectuar-se numa *amostra* desde que o material a isso se preste. A amostragem diz-se rigorosa se a amostra for uma parte representativa do universo inicial."

[14] Originally in Portuguese: "devem obedecer a critérios precisos de escolha e não apresentar demasiada singularidade fora desses critérios."

[15] Available at: https://piaui.folha.uol.com.br/lupa/2018/05/10/verificacao-de-noticias-lupa-facebook/

Topic	Number of cases	Percentage
Politics	104	25.55%
Cures	84	20.64%
Data	80	19.66%
Contagion	75	18.43%
Economy	29	7.13%
China	26	6.39%
Others	9	2.21%
Overall	407	100.00%

Tema	Número de casos	Porcentagem
Política	104	25,55%
Cura	84	20,64%
Dados	80	19,66%
Contágio	75	18,43%
Economia	29	7,13%
China	26	6,39%
Outros	9	2,21%
Total	407	100,00%

Table 1. This table presents data on the main topics circulating during the pandemic in the analyzed period.
Source: Author's own (2021)

(25.55%), followed by texts on cures, treatments and vaccines (20.64%). The third most common type is false content about data and statistics (19.66%), followed by texts on contagion and social distancing (18.43%). These four topics make up 84.28% of the false content on Covid-19 which circulated in Brazil in the first four months of the pandemic. With a lesser percentage, although still relevant, are the fraudulent texts on economics (7.13%) and the China's role in the pandemic (6.39%). There were only 9 texts that were unable to be classified under these topics and are therefore included in the "others" category.

After mapping the topics we selected 300 texts from the *Lupa* and *Aos Fatos* agencies for further analysis, seeking to understand the main meanings constructed in each topic and the disinformation strategies. In this section we present the result of this qualitative step, including brief examples of the false content we found and, lastly, the mapping of disinformation strategies. The original writing from the examples was maintained, including any grammatical errors.

Politics

The most often used topic in the corpus is politics. There are 104 false contents (25.55%) that refer to politicians, political parties, or measures adopted by federal and state governments. The dominant narrative in these texts favors President Jair Bolsonaro, either by boosting his image or slandering his opposition - particularly the Workers' Party (PT), the governor of São Paulo, João Dória (PSDB), and the president of the Chamber of Deputies, Rodrigo Maia (DEM).

The false content portrays the federal government as being: *sensitive to and concerned with the livelihood of those who are most vulnerable* (it allowed withdrawals from "the Bolsa Família", from "pension funds", and opened registration for "emergency benefits"); *competent and responsive* ("Army makes 2 thousand beds in 48 hours", "World Bank praises government", "Trump supports Bolsonaro") and; *prevented from fighting the pandemic* by the Supreme Court (STF).

The texts also favor Bolsonaro by slandering the image of his opponents. The PT party and its politicians are the main target: according to the unverified content, the party is: *irresponsible* ("wants to prohibit the use of chloroquine", the governor of Bahia "prohibited chloroquine" and "dismissed a doctor who had prescribed chloroquine", the party president "instructed people not to register for emergency benefits"); *dishonest* (the governor of Bahia "manipulates official data", federal deputy Maria do Rosário makes masks "without thread") and; *hypocritical* (Fernando Haddad "breaks isolation").

Bolsonaro's second biggest nemesis, and a frequent target of false content, is the governor of São Paulo. The texts say that Dória is: *irresponsible* ("banned chloroquine"); *the public disapproves of him* ("has a 98% rejection rate"); *inhuman* ("said the vaccine should be tested on the elderly" and that people have to choose "between eating or staying in quarantine") and; *hypocritical* ("broke isolation" and lives in a mansion).

The widespread lies about Rodrigo Maia claim that he is: *Machiavellian* ("dismissed Bolsonaro's project", "forbade

Bolsonaro to close borders"); *inhuman* ("said that the electoral fund is more important than people's lives") and; *dangerous* ("made abortion legal during the pandemic").

Opposition politicians are portrayed as: *incompetent* (Paraíba government "uses health money to hire artists", Pernambuco government "sends sand to hospitals" instead of gel alcohol); *corrupt* (police seize money from "Pará health secretary" with "advisor to the governor of Rio de Janeiro") and; *hypocrites* (they break isolation, don't wear masks, and participate in large gatherings).

Cures

The second most addressed topic in false content is cures, which includes medical treatments and vaccines. This is the subject of 84 cases, or 20.64% of the corpus. There are two main narratives. The first revolves around the science and effectiveness of certain drugs, especially hydroxychloroquine, ivermectin, nitazoxanide, and azithromycin. Chloroquine is mentioned most: "I just left the Unimed da Barra Hospital where my cousin, Antonio Carlos, 67, was diagnosed with COVID-19 16 days ago and today, after being treated with CHLOROQUINE, he is CURED", "Actor Tom Hanks' wife says on CBS that he only lived because he used chloroquine". The texts also say that if you want to avoid the virus you need to take vitamin supplements such as vitamin C, vitamin D and zinc.

The second narrative revolves around common sense, household remedies, and the therapeutic benefit of teas and foods. The false content claims it is possible to prevent getting the virus or even eliminate it by using: *hot or lukewarm water* (clean water "with eight cloves of garlic, chopped", "lemon slices in a glass of warm water", "always keeping your throat hydrated", and "avoid drinking cold water"); *teas* (boldo, fennel); *foods* (garlic, lemon, orange, melon, acerola cherry, avocado, mango, pineapple, beef liver) and; *condiments* (salt, vinegar, pepper, honey, and ginger). The false content also claims that changes in one's behaviour could make people immune to or even kill the virus simply by sunbathing, facial shaving, or pouring bleach into your drains.

Another narrative on this topic concerns vaccines - both in an optimistic (the vaccine cures in three hours) and paranoid manner (Bill Gates created a vaccine in the form of a seal to monitor people, the vaccine is being tested only on monkeys, the vaccine will be approved without testing). Tests for detecting the virus are also described as *dangerous*: the test with a cotton swab "can reach the brain" and there are "attackers disguised as health workers".

Data

Data, numbers and statistics are a major vector of false content. We found 80 cases, or 19.66% of the corpus that matches this category. The main meaning constructed in this content is that of *dishonesty*: there is an effort to "demonstrate" that the figures released by the media are exaggerated, politicians are interested in exaggerating this data, and the pandemic is not as serious as it seems. The dominant narrative in this topic is the texts that claim *the hospitals are empty* ("Another hospital in Fortaleza is empty and the Ceará media continues to spread panic", "I saw everything, except patients!"). According to the false content, investigations by the Federal Police and the Ministry of Health show that *the real numbers are lower* ("Miracle! Right after Minister [of Justice] Sergio Moro announces that the Federal Police will investigate Covid19 deaths, the number of deaths is falling in every country!", "Minister of Health has a gift for healing. After visiting Manaus the death toll dropped from 150 a day to 2 and that *deaths by other means are recorded as Covid* ("This gentleman was a tire repairman and his death was accident-related at work...doctors were obliged to register the death as being by covid-19", "registry records prove there is no epidemic"). These falsifications are occurring because hospitals, states and municipalities *profit by registering Covid-related deaths* ("Did you know that every time they put Covid-19 on the death certificate, the hospital receives R$18,000.00 reais?"), The computerized system *makes the registration* ("they put this system in place. We are being forced to diagnose it as coronavirus") and the *tests are tampered with*.

A second narrative focuses on fear. According to the false content, *coffins are being buried empty or with stones in them* (in Belo Horizonte, Belém, and Marabá) and *people are being buried alive* ("Man is buried alive in Feira de Santana, Bahia. He had a cardiac arrest and was presumed dead by COVID-19", "Elderly woman is tagged as dead").

A third narrative falsifies data in order to claim that *the number of deaths has dropped* ("Outbreak will end in 20 days") and *the number of those who have recovered from the virus has increased* ("Survival rate in Brazil: 99.995 %").

Contagion

The fourth most common topic in our corpus is contagion, which includes measures for preventing

infection and its spread. There are 75 cases for this topic, or 18.43% of the collected material. Quarantine is the aspect that generates the most discussion. The false content claims *there is no reason for quarantining* ("A study with more than 60 thousand people in Spain shows the ineffectiveness of quarantines", "Drauzio Varella defends that Brazilians do not stay in quarantine", "quarantine kills!"), and *just isolate the elderly* ("Israel isolated the elderly and the risk group"). Portrayed as an authoritarian measure, the texts claim that people opposed to quarantining are *forcefully repressed* ("Governors of São Paulo, Bahia and Rio authorized the police to shoot anyone in the streets, in the town squares, and on the beaches", "Aggressive police arrest dangerous elderly citizens at the behest of the governor") and *can be fined* ("Municipal Guard and Military Police are issuing fines to those driving without a mask").

This topic is also used to falsify the *hypocrisy* of those who publicly defend social distancing yet *participate in large gatherings* ("Preta Gil has Coronavirus. She led 300 thousand people down the street, everybody was sweating and bumping into each other", "Brazil in quarantine and funk dancing in São Paulo") and *break the quarantine* ("In the middle of quarantine she [Maju Coutinho] goes out for a walk with her husband and even takes a selfie").

The false content addresses the *risks of wearing a mask* ("Prolonged use of masks results in hypoxia", using a mask makes the blood acidic) and the *danger of alcohol gel* ("the alcohol gel used to prevent coronavirus can have negative effects on breathalyzers", alcohol gel can catch fire inside the car). They also lie about *characteristics of the virus* (a protein also present in HIV, "It is NOT a VIRUS, it is A BACTERIUM, which causes death").

Economy

The economic impact of the pandemic is the subject of 29 false contents, or 7.13% of the corpus. A large number of these cases refer to scams that try to collect the victim's data through malicious links posing as food hamper *donations*, cleaning products, diapers, fuel, cell phones, gas, and free access to *streaming* services.

Another group of texts creates a sense of *chaos* created mainly by quarantine measures. This chaos is related to *bankruptcies of well-known companies* (Itapemirim, Petrobras, Uber, Bar Brahma), reports of *major entrepreneurs experiencing difficulties* ("Owner of the Atacadão Carrefour Network spoke the truth"), *entrepreneurs and unemployed people committing suicide* ("Man throws

himself off the São Paulo viaduct after losing job to the quarantine", "Businessman cannot stand the pressure and commits suicide after firing 223 employees because of the crisis") and *supermarket looting* ("Coronavirus: markets and stores are looted in São Paulo").

China

China was the main topic in 26 cases of false content, or 6.39% of the corpus. These are lies created and fueled by xenophobia which stems from the recognition of the technological capacity of the Chinese. These texts portray the Chinese as *evil and dangerous*.

The dominant narrative here is: *China is responsible for the disease* or *China created the virus in a laboratory* (Chinese scientists inserted a protein taken from bats into a type of coronavirus adapted for mice and created a super virus; the index case was a Chinese laboratory employee) either because *it intentionally spread the virus* (China exported masks with Covid, "URGENT!!! Contaminated masks will be distributed according to the Communism plan!!!"), or because *its people have exotic eating habits that gave rise to the virus* (images of selling bat, snake, dog and rat meat at the "Wuhan market").

These texts also claim that China has *obtained economic and political benefits from the virus* ("The President of China says the time has come for the country to lead the world", "While the world is in quarantine, China buys Volvo, Pirelli, Thomas Cook, and part of Mercedes Benz. Do you understand the pandemic?") and *hides the real data* (the country is burning bodies en masse to mask the real situation).

Others

Only 9 cases (2.21% of the corpus) are about other topics. These false contents deal with the release of prisoners, blocking WhatsApp, and accusing the World Health Organization (WHO) of encouraging masturbation, among other issues.

Types of Disinformation

After reading all the verified news texts and the original false content of the 300 cases in our qualitative sample, we looked at the types of disinformation strategies used to create this content. We use the seven types proposed by Wardle and Derakhshan (2017) and Wardle (2019): *fabricated*

Type	Number of cases	Percentage
False context	145	48.34%
Fabricated content	86	28.67%
Imposter content	37	12.33%
Misleading content	22	7.33%
Manipulated content	9	3.0%
Satire or parody	1	0.33%
False connection	-	-
Overall	300	100,00%

Tipo	Número de casos	Porcentagem
Falso contexto	145	48,34%
Conteúdo fabricado	86	28,67%
Conteúdo impostor	37	12,33%
Conteúdo enganoso	22	7,33%
Conteúdo manipulado	9	3,0%
Sátira ou paródia	1	0,33%
Falsa conexão	-	-
Total	300	100,00%

Table 2. This table shows the main types of disinformation detected from qualitative analysis.
Source: Authors' own (2021)

content, manipulated content, imposter content, false context, misleading content, false connection, and *satire or parody*. The result of this mapping is shown in Table 2.

Almost half of the unverified content (48.34%) use *false context*; a true fact or a genuine image that is taken out of context to generate an untruth. For example, the fact did occur, but not for the reason given; the photograph is genuine, but it refers to a different situation; the document is true, but it does not concern that subject; the video is real, but it predates the fact which is being reported. Wardle (2019) points out that this strategy makes tracking artificial intelligence systems more difficult. In addition, we understand that anchoring in true facts and images helps establish trust, inducing the interlocutor to think that "if this is true, then that is also true, or should be". A similar result was found by Brennen *et al.* (2020). They analyzed 96 images of disinformation content about Covid-19 and concluded that, in most of those cases, a genuine image was used to support a false statement.

The second most common type of disinformation is *fabricated content* (28.67%), which refers to content that is totally false and is created to deceive. This type of disinformation relies on one's ignorance about reality and how institutions operate, and on the interlocutor's inability to recognize fabrications. This kind of content makes up characters, research centers, and statements that never existed.

The third type, present in 12.33% of the corpus, is *imposter content*, which will use the logo of an official organization (ministry, political party, technology company) in false content or make up a statement from a genuine source.

The other types of disinformation are less present. *Misleading content* was found in 7.33% of the texts, making deceptive content from originally genuine information. For example, it uses an incorrect scale to show data, it compares incomparable data, it shows the draft of a law that in fact was not approved. *Manipulated content*, found in only 3% of cases, directly changes the meaning of content by digitally inserting elements into a photo that were not in the original, doing voiceovers to change someone's original speech or inserting captions that do not correspond to the speech. We found only one case (0.33%) of *satire*, which is originally satirical content that ends up being taken "literally" and circulating as if it were true. In our corpus, this satire was a video of a comedian impersonating an evangelical pastor who was selling "invisible masks". Lastly, we found no cases of *false connection*, which refers to an internal discrepancy, for example, when the headline or image of an article does not reflect the content.

The Actors

In this section, we identify the agents involved in the distribution of disinformation. We detected 50 actors in 60 of the 407 events. In other words, we were able to identify actors in 14.74% of the corpus; approximately one in seven analyzed texts. We used the database from the information provided by the fact-checking agencies and by us after reading the news that corrected the false content.

We consider an *actor* to be the person or institution that influences social network followers, such as

politicians, celebrities, journalists, bloggers, activists, businessmen and religious leaders. We are talking here about personalities and institutions whose roles in the networks increase the visibility of certain content in the conversations, enhancing their reach (Recuero and Soares, 2020). We are not saying that these actors created the rumors and deceptive content, but that they played a fundamental role in the distribution and reach of this type of material. Generally speaking, people who assume the role of a non-scientific authority take advantage of their hierarchical positions to question information from expert systems such as the press, universities and international organizations (Machado *et al.*, 2020a) and, when convenient, distort science and decontextualize technical notes.

In our survey we found that the main Covid-19 disinformation actors to be the people closer to President Jair Bolsonaro: his political allies, family members, government members and supporters. Federal deputy Osmar Terra, who is also a physician, is at the top of the list of individuals who spread disinformation the most during our analysis period, with four occurrences. Next, with two occurrences each, are President Jair Bolsonaro, his son Carlos Bolsonaro (who is a councilman in Rio de Janeiro), columnist Rodrigo Constantino, state deputy André Fernandes, from the state of Ceará, former federal deputy Roberto Jefferson, and the *Mídia Five* and *Gazeta Brasil* websites.

The list of personalities who have admittedly shared disinformation on at least one occasion is long; among those who stand out, due to their social and political importance, are journalist Alexandre Garcia, Pastor Silas Malafaia, and businessman Winston Ling. We will talk more about the first two personalities listed above in the section on platforms. Among those who also shared false content and have connections with the government or the Bolsonaro family are: advisor Arthur Weintraub; federal deputy Bia Kicis; federal deputy and son of the president, Eduardo Bolsonaro; Bolsonaro supporter, Olavo de Carvalho; Environment Minister, Ricardo Salles; and even the Federal Government's Secretariat of Communication, which defended the use of chloroquine.

These actors all shared false content which opposed social distancing and was in favor of resuming the economy and attacking politicians who took measures to contain the spread of the disease, such as the governor of São Paulo, João Dória. They also questioned the data on the pandemic. In fact, Dória was the main political target of disinformation in the studied corpus.

The results of this study are in line with previous research and new monitoring carried out by fact-checking agencies. In December 2020, a survey conducted by *Aos Fatos* showed that, among parliamentarians, those aligned with the federal government led the plethora of disinformation about Covid-19 (Barbosa *et al.*, 2020). Osmar Terra, Eduardo Bolsonaro, Carla Zambelli, Bia Kicis and Flávio Bolsonaro had the largest number of engagements from their tweets from March 11 to December 15. To present numbers on this, during this time period Osmar Terra published more untruthful or inaccurate content (104 tweets) than true (44 tweets).

In their study on disinformation linked to a cure for Covid-19 on Twitter, Recuero and Soares (2020) realized that misleading content (true information used to create false meaning) was the most recurrent type of disinformation used on the networks analyzed at the time, from March 20 to 29, 2020. In this way, they explain that the type of disinformation that spreads the most has a factual basis, but it distorts and manipulates facts to build a false perception. In a methodology that combined Social Network Analysis and Content Analysis, these researchers concluded that there is a connection between Bolsonaro's discourses and the spread of disinformation by influencers who support him. They also noted that the circulation of disinformation increased with the president's statements.

In general, the disinformation on Covid-19 follows regional standards of Brazil's cultural, geographical and political issues. Another characteristic of Brazil is the power struggle at different levels of government (Machado *et al*, 2020b). The term "governor" was prevalent in the context of disinformation as President Jair Bolsonaro tried shunning the responsibility of controlling the spread of the disease. In our study we observed that, in addition to Governor João Dória, mayors and governors from other Brazilian states also became constant targets of disinformation. Bolsonaro's political enemies and opponents are often these targets.

In order for disinformation to thrive there has to be an audience to engage. Without this engagement, disinformation becomes simply fictional content (Tandoc Jr. *et al*, 2018) and does not achieve the goals of its creators and disseminators. Studies in the area of psychology and cognition show that people tend to consume information that they agree with, a condition known as confirmation bias (Carnielli and Epstein, 2019; Cosenza, 2016). The platforms and actors that use digital social networks are a fundamental part of this construction. A user will follow people he or she knows or likes, including politicians and celebrities. The public, most of whom would not have any direct access to these people through other means, feel close to them by

Platform	Number of cases	Percentage
Facebook	321	65.11%
WhatsApp	78	15.82%
Twitter	34	6.90%
Site	22	4.46%
YouTube	19	3.85%
Social media	7	1.42%
Instagram	6	1.22%
Blog	3	0.61%
Telegram	1	0.20%
Email	1	0.20%
TikTok	1	0.20%
Overall	493	100.00%

Plataforma	Número de casos	Porcentagem
Facebook	321	65,11%
WhatsApp	78	15,82%
Twitter	34	6,90%
Site	22	4,46%
YouTube	19	3,85%
Redes sociais	7	1,42%
Instagram	6	1,22%
Blog	3	0,61%
Telegram	1	0,20%
E-mail	1	0,20%
TikTok	1	0,20%
Total	493	100,00%

Table 3. This table presents the occurrences of disinformation on different platforms.
Source: Authors' own (2021)

receiving and sending comments and interactions.

Lastly, we have recognized the significant role that humans play in spreading disinformation. Both this study and other studies presented in this section emphasize the importance of politicians and influencers in the public debate. Although digital social networks open space for robots (automated profiles), a number of interactions occur across organic channels (Dourado, 2020). As we have seen, the actors responsible for spreading disinformation on Covid-19 in Brazil are often associated with political disputes rather than the expected scientific rigor for controlling a pandemic.

The Platforms

In this study we identified that the 407 disinformation texts circulated on one or more platforms. Based on the classification made by the fact-checking agencies and from reading the texts, we observed 493 accounts of massive content distribution on Facebook and WhatsApp (Table 3). The prioritization of these two spaces matches data from the *Digital News Report* from 2020 (Newman *et al*, 2020) which shows that 54% and 48% of Brazilians use Facebook and WhatsApp to obtain their news, respectively. These are followed by YouTube (45%), Instagram (30%) and Twitter (17%).

The platform which most frequently circulated disinformation on Covid-19 was Facebook, with 321 occurrences (65.11%). It is the most popular digital social network among Brazilians, with 141.4 million users[16]. WhatsApp, with around 120 million users in Brazil, appears in second place, with 78 occurrences (15.82%) in our corpus. One reason why these two platforms are used so much is the fact that mobile operators offer unlimited access to social networking applications without users having to consume their mobile data. This does not mean that all content created and shared in these spaces is misleading, or that all users deliberately share false content. People who are more engaged in political conversation tend to be more exposed to disinformation and, as a result, accidentally tend to share content on platforms like Facebook and WhatsApp (Rossini *et al.*, 2020). What's more, we must consider that the agencies may have fact-checked more content originating from Facebook due to its partnership with the platform that facilitates user request verification.

Our study also shows that the platforms with the highest circulation of disinformation on Covid-19 in Brazil are, in order: Twitter, with 34 occurrences (6.90%); websites, 22 (4.46%); YouTube, 19 (3.85%); unspecified social networks, 7 (1.42%) and Instagram, 6 (1.22%). On a smaller scale we have blogs, with 3 occurrences (0.61%), and platforms such as Telegram, e-mail and Tik Tok, with only one occurrence (0.20%) each.

[16] Available at: https://www.statista.com/statistics/244936/number-of-facebook-users-in-brazil/

Politicians, celebrities and influencers understand the logic of platforms and are able to produce and distribute content that is engaging, usually built on the basis of inflammatory speeches and emotion. Twitter, for example, is a platform often used by populist politicians like Donald Trump and Jair Bolsonaro under the mantle of disintermediation and establishing a direct line to their constituents (Gehrke and Benetti, 2020).

YouTube has also been filling a space previously dominated by television broadcasters and, consequently, by a type of specialized news content. According to Machado *et al.* (2020a), YouTube has about 120 million users in Brazil, second only to Rede Globo in terms of the number of videos watched in the country. In addition, these authors estimate that about 70% of traffic on the platform is the result of algorithmic recommendations.

When examining the disinformation on YouTube regarding the pandemic, Machado *et al.* (2020a) noted the existence of four main networks: conspiracy theories, religion, business opportunities for doctors, and quality journalism. Of note are channels from people who are references in their spaces such as Pastor Silas Malafaia, leader of the Evangelical Church Assembly of God and an important ally of Bolsonaro in winning over the conservative electorate. Even in channels associated with journalism there was a spread of disinformation, as was the case with three videos recorded by journalist Alexandre Garcia, former presenter at Rede Globo.

These kinds of situations suggest that receiving information from someone who appears to be familiar can negatively affect the critical analysis of the information received. One of the points discussed by Tandoc Jr. *et al* (2018, p. 139) is the fact that distribution across platforms blurs the concept of information sources: "Receiving information from socially proximate sources can help to legitimate the veracity of information that is shared on social media networks. However, users seldom verify the information that they share".

Highly mediated by algorithms which few know much about and have customization as their main function, platforms favor interpersonal communication to intensify interactivity between users. "Algorithms have therefore become the mainstays for curating content and fragmenting audiences on social media to the point of shaping how users interact with each other and con-

sume information"[17] (Dourado, 2020, p. 63). The personalization and the recommendation algorithms define what users see in their *feeds*, which escapes the hierarchy established by news media products.

The platforms which circulate the most disinformation also indicate the most recurrent formats of disinformation on Covid-19. We identified 489 accounts of format occurrences, and the same disinformation can be constructed in more than one type. More than half of this total is textual, with 258 occurrences (52.76%). These are followed by images, with 121 (24.74%), and video, with 98 (20.04%). On a smaller scale are audio, with 10 (2.04%), graphics and application forms (to collect data on alleged promotions), with one occurrence (0.20%) each.

Although texts are naturally the most recurrent format as they work as a basis and complement to other materials, the number of images associated with misinformation present in a quarter of this study's corpus is noteworthy. As we alluded to in the themes section, one of the main functions of using images with texts is to illustrate and selectively emphasize the elements of disinformation, not to mention encourage beliefs about and attribute disinformation to public personalities, as discussed by Brennen *et al.* (2020).

Final Considerations

The desire for truth depends on doubt, perplexity and distrust. Beliefs and convictions which go unsupported by evidence should not be accepted, as it is only possible to perceive reality and distinguish what is true from what is false through doubt. Lying is not an invention of our time, but technological advancement and the logic that benefits impostors, including financially, largely favor the existence of lies. Nowadays we are immersed in what Moretzsohn (2017, p. 295) calls "an environment of absolute information insecurity"[18], in which deception, distortions and untruths devastate reputations and cause sometimes irreversible damage. This environment of disinformation was already a major problem, but in the context of the pandemic it has become even more of an issue because it has an immediate effect on the health system, on people's behavior and, ultimately, on life itself.

Fact-checking is motivated by doubt. Verify-

[17] Originally in Portuguese: "Algoritmos se tornaram, portanto, sustentáculos de curadoria de conteúdo e fragmentação de público em mídias sociais a ponto de moldar como usuários são levados a interagir entre si e a consumir informações"
[18] Originally in Portuguese: "um ambiente de absoluta insegurança informativa".

ing public content that circulates in other spaces was taken on by journalism as another one of its commitments to the public interest. The effectiveness of fact-checking agencies is certainly limited and is not immune to flaws and biases, but what we observed in our corpus was work carried out diligently in search of the truth, work that is concerned with informing readers and making the verification methods transparent.

Our intent with this article was to understand what types of false content were circulating in Brazil in the first months of the pandemic, who was spreading it, and on what spaces. We found this a valid environment from which to collect our corpus and we only worked with information that the fact-checking agencies had already classified as false. We collected 407 cases of lies about Covid-19 verified from March 15th to July 21st, 2020. Our mapping shows that 84.28% of the false content deals with politics, cures, data and contagion. These were lies about politicians and government actions mostly used as an attempt to boost the image of Jair Bolsonaro. There were lies about treatments, medicines and vaccines, about official data, hospitals and empty coffins, about the ineffectiveness of quarantining and the risks of wearing masks and using alcohol gel, among others.

In order to understand the types of disinformation we analyzed a sample of 300 cases, of which 48.34% fell under the "false context" type: they use an image or a true fact and take it out of context to create false information. This type of disinformation is difficult for artificial intelligence systems to trace, in addition to inducing trust in the whole (false) based on trust in the part (true). Another 28.67% fell under the "manufactured content" type which is totally false and created with the intent to deceive.

The influences of those around Bolsonaro are also main actors of disinformation. The prominent disseminator of false content on the pandemic is federal deputy Osmar Terra, followed by the president himself, his son Carlos Bolsonaro, columnist Rodrigo Constantino and state deputy André Fernandes. In our corpus we were only able to indicate who shared what information in just 60 occurrences, which shows just how difficult it is to identify the origin of the false content. Lastly, we found that the two platforms most often used to spread disinformation are Facebook and WhatsApp, which represent 65.11% and 15.82% of the 493 records found in our corpus, respectively.

Disinformation essentially relies on maintaining prejudices and "beliefs that paralyze the ability to think and act freely"[19] (Chaui, 1994, p. 93). It needs to maintain the dogmatism that false content is produced and shared, as poorly informed subjects are easier to convince and motivate. More important than the specific information in each content are the beliefs and convictions that are being fed, as well as the political and economic interests of those who produce and share lies and deceit.

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[19] Originally in Portuguese: "crenças que paralisam a capacidade de pensar e de agir livremente."

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