

# Computational Power: Use of Automation on WhatsApp in the Elections

A study on the use of automation tools to boost political campaigns digitally in the 2018 Brazilian elections



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## Abstract

The 2018 Presidential Elections has raised great concern in Brazilian media, academia and society regarding the strategic use of political campaigning on social networks, mainly the messaging application WhatsApp. In this context, **this study investigates the primary factors that demonstrate the degree of coordination among WhatsApp groups and identifies patterns of behavior of users who are disseminating content.** To this end, we monitored 110 open political groups on WhatsApp for a period of one week, and we analyzed the list of members and messages to answer three questions: 1) if there are indications of automation being used to send messages; 2) if there are indications of coordinated distribution of information among WhatsApp groups; and 3) what the degree of connection among participants and administrators of the political groups on the platform is. **Our study concluded that there is strong evidence of automation being used in multiple WhatsApp groups and that there is a high degree of interconnection, as evidenced by the large number of administrators and members shared by these groups among each other.**

Keywords: Bots, Cyborgs, Elections, WhatsApp, Social Media.

## **EXECUTIVE SUMMARY**

Users, researchers and journalists have been focusing on the role of WhatsApp as a tool of political propaganda. In this study we present the preliminary results of the analysis of this phenomenon in Brazil at election time, indicating the means to expand the ways computerized propaganda can work on this platform.

The researchers focused on three indicators that could demonstrate professional and organized use of this platform as a means of political propaganda: 1) detection of automation being used to send messages; 2) coordinated distribution of information among WhatsApp groups; and 3) the degree of connections among the participants of these messaging groups. These types of use assume costs for maintenance of hardware, software and personnel to run it, the magnitude of which cannot yet be estimated.

Analysis of data to date has identified relevant patterns of use of WhatsApp in the 2018 Brazilian electoral process, with the highlights of this study being:

- The presence of profiles in messaging groups with posting patterns that indicate a high probability of automated or semi-automated behavior (with coordinated human intervention);
- Coordinated and symmetrical use among different users of the platform in different groups of a pattern of message posting; and
- The distribution of administrators and participants in the analyzed groups that indicates articulation able to amplify the propagation of messages among different groups.

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## CONTEXT

The 2018 Brazilian elections have been showing unique characteristics when compared to other elections since ratification of the 1988 Federal Constitution. For the first time, we are seeing that digital tools, especially social media platforms, have been playing a more important role than traditional media in informing and convincing the electorate. Traditional party candidates, with large allotments of broadcasting time during the free electoral TV time slot, have performed poorly at the polls. Geraldo Alckmin, of the Brazilian Social Democratic Party (PSDB in the Portuguese acronym), occupied almost half of total television time in relation to his adversaries and, even so, received less than 5% of the total votes in the first round of voting.

In spite of TV time being one of the variables in comparing candidates' performance, it cannot be considered in isolation. Nonetheless, various studies confirm that more time during the Free Election Advertising time significantly increases the chances of success in the election.

<sup>1</sup> In this election, parties with little TV time had great success in majority elections.

Successful candidates of parties with little TV time, such as the Liberal Social Party (PSL in the Portuguese acronym), massively exploited the internet as the main vehicle to reach their voters. Strategies that focused on the internet have been used for at least three years and rely on a significant number of volunteers who coordinate their actions to amplify messages favorable to their candidates over the internet and, at the same time, dispute negative messages regarding those candidates, using reply fields provided on social media platforms or comments on news websites.<sup>2</sup>

According to a study done at the beginning of the year, about 56% of Brazilian voters said their choices of candidates for president were influenced by social networks.<sup>3</sup> Thus, there are hypotheses that point to the effectiveness of this strategy, especially in the first round, even if, to different extents and with different strategies, all candidates have made use of digital campaigns. There is still little understanding of the use of automation and computational power to influence election decisions. The sudden changes in the volume of activities, as well as

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<sup>1</sup> Borba F.; Cervi, E. U. in his work on the relationship between propaganda, money and government evaluation of candidates performance in majority elections in Brazil: *Relação entre propaganda, dinheiro e avaliação de governo no desempenho de candidatos em eleições majoritárias no Brasil*. OPINIÃO PÚBLICA, Campinas, vol. 23, nº 3, Sept- Dec., 2017. Available at <http://www.scielo.br/pdf/op/v23n3/1807-0191-op-23-3-0754.pdf>.

<sup>2</sup> Such as the army of volunteers that was set up in the network media to propel candidate Bolsonaro's campaign in the 2018 elections. Available at <https://www.bbc.com/portuguese/salasocial-39837332>. Accessed on Oct. 20, 2018.

<sup>3</sup> Sá Pessoa, in his article on how paid advertising on social networks expands resources for candidates (*"Anúncios pagos em redes sociais ampliam recursos para candidatos"*), published in Folha de S. Paulo, São Paulo, Jan-29-2018. Accessed on Oct. 20, 2018.

indications of coordinated and professional use of automation in the social media by the most-voted candidates,<sup>4,5</sup> raise some questions that motivated this investigation of how the social network campaigns were done.

The 2018 Brazilian presidential election has raised many important questions about the impact and regulation of electoral campaigns in the digital space, especially the prominent role of WhatsApp. Previous studies of the use of social media to influence elections concentrated on social media platforms such as Twitter or Facebook, focusing on these platforms' own, specific dynamics. There are few studies that concentrated on the importance of WhatsApp. This is the objective of this study: to launch the debate on how automation and the use of computational power manifests itself on a platform originally designed for interpersonal communications.

Previous studies involving other social media platforms around the world, such as the use of personal data for directed political marketing in the Brexit<sup>6</sup> campaigns in the UK and for the election of the president of the United States,<sup>7</sup> have already attracted the attention of Brazilian authorities to the phenomenon of computerized propaganda.

Aware of the questions that were being raised concerning Brazilian democracy, Brazilian authorities sought to anticipate and regulate the political use of digital tools, intending to set limits for campaigns and prevent abuse by the candidates. Last year, the Superior Electoral Court (TSE) debated the risks of the use of fake news and automation to manipulate the political debate. However, the focus has always been on other networks, with little attention paid to WhatsApp, mainly due to a lack of understanding of how automation could be used in this environment.

With this specific paradigm in mind, the TSE passed Resolution 23-551/2017, to authorize digital "boosting" while at the same time prohibiting the use of bots, fake news and defamation to achieve political leverage. All this within the framework established by the Election Law, which provides that boosting content on the internet for electoral purposes is allowed as long as it is unmistakably identified and contracted exclusively by politicians,

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<sup>4</sup> L. F. Toledo, in his article on the Pro-Bolsonaro Network engages more people than Madonna and Neymar ("*Rede pró-Bolsonaro engaja mais do que Madonna e Neymar*"), published in the O Estado de São Paulo, Oct. 12, 2018. Accessed on Oct. 20, 2018.

<sup>5</sup> Machado et al., in "News and Political Information Consumption in Brazil: Mapping the First Round of the 2018 Brazilian Presidential Election on Twitter". Available at [https://comprop.oii.ox.ac.uk/wp-content/uploads/sites/93/2018/10/machado\\_et\\_al.pdf](https://comprop.oii.ox.ac.uk/wp-content/uploads/sites/93/2018/10/machado_et_al.pdf). Accessed on Oct. 20, 2018.

<sup>6</sup> Social media firms must tell users exposed to Brexit propaganda, MP says. Available at <https://www.theguardian.com/uk-news/2018/feb/10/social-media-firms-must-tell-users-impacted-by-propaganda-mp-says>. Accessed on Oct. 20, 2018.

<sup>7</sup> How Trump Consultants Exploited the Facebook Data of Millions. Available at <https://www.nytimes.com/2018/03/17/us/politics/cambridge-analytica-trump-campaign.html>. Accessed on Oct 20, 2018.

coalitions and their representatives.

**One hypothesis is that the efforts of the Superior Electoral Court together with the commitment of social media platforms apparently had an effect on the distribution of fake news and the use of bots on other media but not on WhatsApp.** During the first round of the elections, there was a noticeable reduction of fake news on Twitter,<sup>8</sup> which can be explained by the platform's proactive stance in combating this practice, as well as the implementation of notice and takedown mechanisms

If we observe the behavior of candidates on platforms like Twitter and Facebook, we see that these channels began to give an "official" tone to campaign discourse as they are open channels that have other audiences and are subject to public scrutiny of their responsibility for arguments presented.

On the other hand, instant, interpersonal messaging tools such as WhatsApp began to be important instruments for disseminating political and electoral content, without the content exchanged between its users being subject to the same level of public scrutiny, due to the nonexistence of previous studies of automation processes and the use of computational power on this platform.

Intense use of instant messaging tools as a propaganda vehicle for political campaigns thus became fertile ground for the proliferation of fake news, due to the absence of specific approaches able to carry out any type of inspection or mitigation measures regarding the content exchanged over these channels.<sup>9</sup>

This phenomenon demonstrates the importance of specifically analyzing the role of interpersonal communicators such as WhatsApp as instruments of political propaganda. To have an idea of the magnitude of Brazilian activity, according to data from WhatsApp itself, Brazil has some 120 million users of the platform, 10% of total users worldwide. Further, if we compare this information with data from the Brazilian Institute of Geography and Statistics (IBGE), we see that Brazil has 116 million people (64.7%) with access to the internet,<sup>10</sup> with smartphones being their main means of access. In this context, we realized the enormous importance of the fact of half the population that uses the internet uses WhatsApp as the main

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<sup>8</sup> Machado et al., "News and Political Information Consumption in Brazil: Mapping the First Round of the 2018 Brazilian Presidential Election on Twitter". Available at [https://comprop.oii.ox.ac.uk/wp-content/uploads/sites/93/2018/10/machado\\_et\\_al.pdf](https://comprop.oii.ox.ac.uk/wp-content/uploads/sites/93/2018/10/machado_et_al.pdf). Accessed on Oct. 20, 2018.

<sup>9</sup> Elections with fake news?: A week inside 272 political groups in WhatsApp shows how a divided Brazil is moved by fake news. Available at <https://www.bbc.com/portuguese/brasil-45666742>. Accessed on Oct. 22, 2018.

<sup>10</sup> Brazil has 116 million people connected to the internet, says the Brazilian Institute of Geography and Statistics - IBGE. Available at <https://g1.globo.com/economia/tecnologia/noticia/brasil-tem-116-milhoes-de-pessoas-conectadas-a-internet-diz-ibge.ghtml>. Accessed on Oct. 20, 2018.



source of news and information, according to the 2018 Reuters Digital Report.<sup>11</sup>

The ways of building communication networks on instant messaging applications like WhatsApp are different from those observed on social media. The latter emphasize opening connections to expand their network. This means that the network becomes stronger and is able to indicate new connections in that more users connect through it. Using WhatsApp, on the other hand, depends on the actions of users when they meet their interlocutors, adding their numbers or being added by their contacts to discussion groups. WhatsApp also implemented a function that allows users to enter discussions groups by clicking on public links, which was widely used in the Brazilian electoral process.

This ecosystem allowed the emergence of a large number of companies with the objective of helping to build artificial connections among users for mass dissemination of messages. These companies offer to sell databases of personal information for spreading messages, as reported in the newspaper, *Folha de São Paulo*,<sup>12</sup> and the lists of services offered on the websites of these companies themselves. Another report considered more sophisticated mechanisms of automation and interpretation of messages exchanged through WhatsApp groups,<sup>13</sup> which allowed the creation of complex filters directed to each related contact in the system's databank. It is worth noting that Brazil still does not have a robust culture of protection of personal data. Following a decade of discussions, only in 2018 did the National Congress pass the General Data Protection Regulation (Law 13.709/18). There are still many aspects of this law lacking implementation in order for it to produce effects and bring true protection for users against abuses of their personal data.<sup>14</sup>

Thus, this study contributes to the debate on the use of automation tools to digitally boost political campaigns in the 2018 Brazilian elections. The proposal is, in particular, to test hypotheses of the ways WhatsApp is used for political campaigns. In the form of questions, the main hypotheses that guide this study are: 1) Can it be said that there is automated behavior in instant messaging applications? 2) Is there coordinated, professionalized action in the distribution of messages and coordination of volunteer contributors? 3) What degree of connection is there among participants and administrators of the political groups on the platform? This study is intended to produce preliminary results concerning automation and coordination of dissemination of information on digital platforms, and contribute to the

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<sup>11</sup> <http://media.digitalnewsreport.org/wp-content/uploads/2018/06/digital-news-report-2018.pdf?x89475>

<sup>12</sup> Businessmen bankroll campaign against the Brazilian labor party PT through WhatsApp. Available at <https://www1.folha.uol.com.br/poder/2018/10/empresarios-bancam-campanha-contra-o-pt-pelo-whatsapp.shtml>. Accessed on Oct. 20, 2018.

<sup>13</sup> Your phone number is worth 9 cents in the politicians WhatsApp list of contacts. Available at <https://theintercept.com/2018/10/22/whatsapp-politicos/>. Accessed on Oct. 22, 2018.

<sup>14</sup> Brazilian Elections and the Public-Private Data Trade. Available at <https://ourdataourselves.tacticaltech.org/posts/overview-brazil/>. Accessed on Oct. 23, 2018.

understanding of new practices for political propaganda that are being used.

## METHODOLOGY

In this study we monitored 110 WhatsApp groups that could be accessed by public-access links. As our data collection reflects the availability of publicly accessible links, and not a numerical accounting of groups associated with one candidate or another, this study cannot be used to make comparisons between the computerized propaganda of one candidate or another. Moreover, the methodology was designed with a specific purpose: to map the characteristics of the use of messages and message groups in election campaigns on WhatsApp messaging application and other similar applications. Since WhatsApp is an interpersonal platform with closed groups, **only open groups, the links to which have been provided on line, allow analysis of this dynamic. Thus, our sample has a clear limitation of being restricted to WhatsApp groups with open links that were available during the research period.**

To obtain these links, we tried to exhaust the possible sources. The sample was created based on a broad search for repositories of open WhatsApp groups, available on the web and through search engines or social networks. We began seeking these bases in the official pages of the parties and their candidates, and also by using search engines to identify other similar lists available on the internet. Further, whenever possible, we added other, similar groups advertised on the very groups being monitored. Our strategy was, therefore, to have a sample generated by a “snowball” sampling, whereby one sample of initial references leads to the generation of subsequent references. The predominance of a political current in the sample reflects precisely the predominance of open groups on WhatsApp that correspond to that political current.

Another step in the methodology was to define which of the groups, from among those in the initial sampling, should be included, or not, in the sample. To do this we guided ourselves by groups in which there was constant use of keywords associated with election campaigns and the political dialog, particularly the use of “Right,” “Left,” “Conservatives,” “Liberals,” or that expressly contained the names or identifications of candidates.

Our data collection was carried out from October 17th to October 23rd, 2018, that is, over 7 days between the rounds of the presidential election. Our monitoring generated a base of 26,487 messages. The messages were collected using tools to export group conversations. Among the data collected, we paid particular attention to keeping general information about

the group (such as the title and pictures used for identification), the list of administrators, the list of users, and information – when available – on business accounts (“business IDs”), as well as messages, including content, author and time (timestamp).

Based on the extracted information, we conducted analyses seeking to address the three research axes: 1) detection of automation in sending messages; 2) the coordinated distribution of information among WhatsApp groups; and 3) the degree of connection among participants of messaging groups.

## Identifying Automation

“Bot” and “cyborg” are terms that refer to the use of automation on social media platforms. The former describes users who are completely controlled by a robot, a program developed by someone so that automated account interacts with other users in a specific way. The latter term refers to the coordinated use of automation by human users, that is, when users develop mechanisms of automation that allow them to leverage their interactions in social networks, for example in the systematic dissemination of content.<sup>15</sup>

To verify the presence of bots or cyborgs we applied a methodology that identifies evidences of the use of automation, based on five criteria related to the profile of the social media users. The methodology, developed by Indiana University, is the same that is used by PegaBot<sup>16</sup> service which calculates the probability that a given account uses automation, by: (i) human aspects of the user’s name, photo and status; (ii) the presence of the user’s activity in multiple groups; (iii) frequency of issuance of messages; (iv) repetition of content and type of message content; (v) reaction to messages from other users in the group and the presence of linguistic elements of emotion.

This approach systematically gathers the main information that each user provides to the network, and evaluates whether there are indications of automated behavior. By analyzing repeated content, the frequency of messages, the type of content and the information available from the user’s profile, this methodology combines the analyses of qualitative and quantitative elements to identify inconsistencies with human behavior. This technique offers a robust and

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<sup>15</sup> Chu Z.; Gianvecchio S.; Wang H.; Jajodia S. Who is Tweeting on Twitter: Human, Bot, or Cyborg? ACSAC 10 Dec. 6-10, 2010. Available at <https://www.eecis.udel.edu/~hnw/paper/acsac10.pdf>. Accessed on Oct. 20,2018.

<sup>16</sup> Pegabot is a service that helps users verify the probability of a Twitter profile behavior being a bot or not. Pegabot was originally launched using the Botometer service, developed by Indiana University, and later developed its own, in open code, coordinated by the Institute for Technology & Society of Rio de Janeiro (ITS Rio), in partnership with the Institute for Technology and Equality. Available at <http://pegabot.com.br>.

comprehensive approach to identify automation.

In practice, when analyzing specific users to detect automation, we first identified the users with the highest frequency of message sending. By analyzing the send rate of some accounts, we verified whether there was consistency incompatible with the activity of a human, mainly considering the intervals between sending messages and the hours the accounts were active. Finally, we listed the 10 most active accounts and sought their profiles, user names, photos and also message content. Based on this sample, we evaluated the probability of whether these users were utilizing automation to spread information.

## **Network Analyses**

The objective of these analyses was to detect similarities and coordination among different WhatsApp groups, seeking patterns of behavior on networks and unified control among groups. We made a table matrix of the members of each group on October 21, 2018, trying to identify how many and which members are shared by each group. Once this was done, we repeated the methodology to evaluate whether the analyzed groups shared the same administrators, and then a third time to map the presence of users who disseminated content.

Using the matrix analysis of the list of members of each group, we identified overlaps of users. For purposes of this study, the number of users in common represents the degree of connection between two WhatsApp groups.

Having done the analysis of overlap at the level of the member lists, we moved on to the analysis of overlap of administrators. We repeated the matrix analysis of the groups, looking exclusively for overlaps of users with admin status, who have greater powers to moderate presence and participation in the groups.

Finally, we mapped the presence of the 10 most active disseminators of information, identifying to which groups they belonged.

Based on the matrices we generated to identify the presence of users in the WhatsApp political groups, we generated graphs that represent the distribution and interconnection of members and groups on the network (see Figures 1 - 3). To generate these graphs, we used a graph-drawing software called Gephi and designed the network graphs by using force-directed, graph-drawing algorithms, which allow the generation of social network graphs based on the calculation of attraction and repulsion between nodes and edges.

# RESULTS

## Analysis of users who disseminate information

For this study we used a sample of the 10 users who sent the most messages between October 17th and 23rd, 2018, irrespective of each one's group or political support. The analyses of users' message sending frequency found that these users, together, sent more than 2,292 messages, an average of 229 messages per user, and that the most active user reached the number of 360 messages sent in the same period. **The average number of messages sent by the 10 most active users is 25 times greater than the general average of users analyzed in the same sample, which was 9 messages per user.**

**By analyzing the sequence of messages sent we identified intervals of message sending with very short times between them, which varied between 1 and 20 seconds.** When we analyzed one of these blocks of messages sent by a user with the cell number (049) \*\*\*\*\*-3553 in detail, we obtained the following sequence of dates and times of sending:

2018-10-18 5:12:54 pm  
2018-10-18 5:12:58 pm  
2018-10-18 5:12:58 pm  
2018-10-18 5:12:59 pm  
2018-10-18 5:13:00 pm  
2018-10-18 5:13:00 pm  
2018-10-18 5:13:01 pm  
2018-10-18 5:13:02 pm  
2018-10-18 5:13:04 pm  
2018-10-18 5:14:08 pm  
2018-10-18 5:14:09 pm

**Further, the analysis of the profiles found that 8 of these 10 users had**

**profiles with no names, used impersonal photos which can be found on the internet, and showed no status or the standard WhatsApp status.**

It is also interesting that, for their activity, the largest part of the content consisted of retransmitting media files, with little or no text produced by the users.

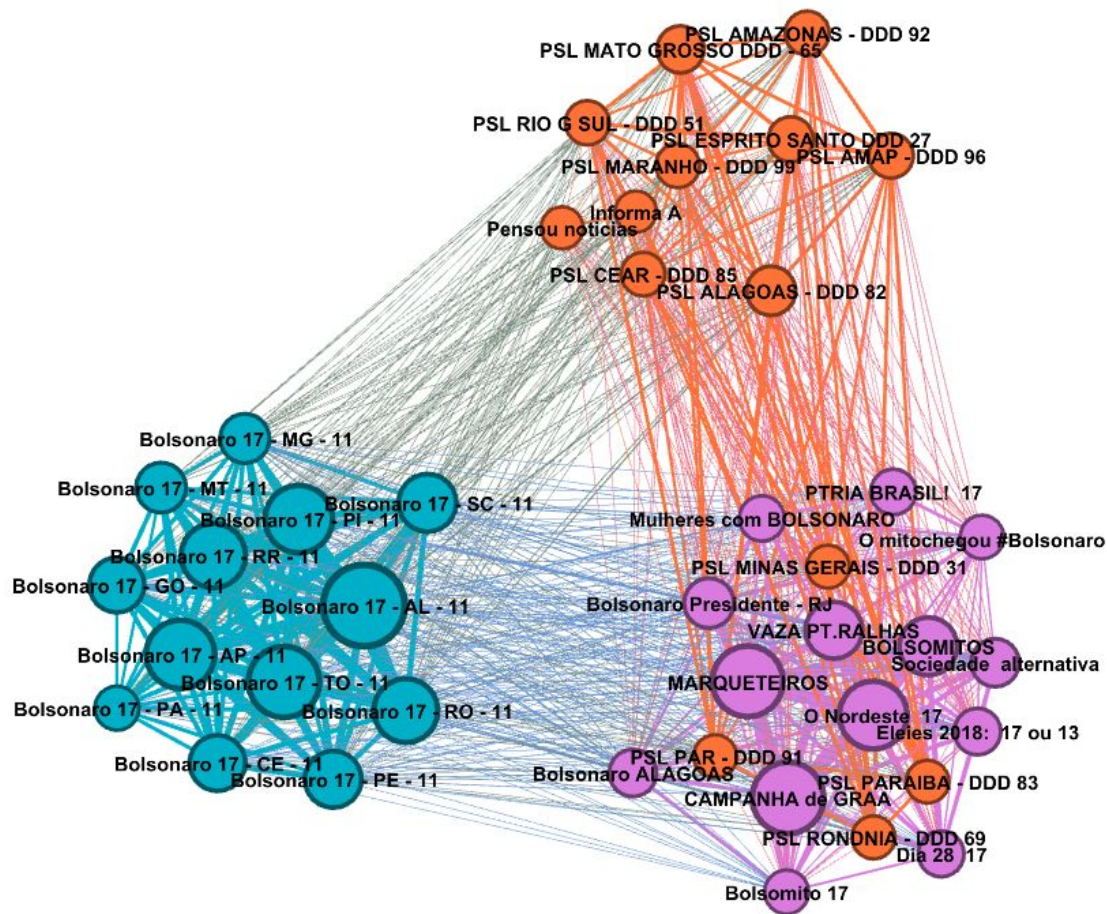
**From these characteristics, the interpretation is that there are elements that point to a high probability of these users' activities being the product of total or partial automation, to disseminate content, and can be classified as bots (total automation) or cyborgs (partial automation).**

### **Analysis of the overlapping of members**

The groups presented a high level of overlapping members. Our analysis identified 14 pairs of groups that shared 40 users or more among them, and the pair that was most intensely connected shared 58 between them. In total, we identified 223 pairs of groups that shared more than 10 users among them. It is worth pointing out that, regarding the users, we identified 38 users who are members of 10 or more groups, and the most connected user was a member of 21 groups.

This means that WhatsApp political groups are not comprised of isolated bubbles with a low level of communication, but rather a network or groups with many users receiving and sharing content on multiple media, with coordination among them. This emulates the “broadcast” model, even considering the originally decentralized architecture of WhatsApp.

This is reflected, further, on the high degree of coordination that exists among the groups for the dissemination of content.



**Figure 1: Social network graph of member sharing among the most interconnected WhatsApp groups.<sup>17</sup>**

*Connection model of WhatsApp political groups that present the greatest number of interconnections between themselves. The nodes represent the WhatsApp groups with their size varying according to the number of shared members; the edges represent the members shared between two groups, with the thickness of the line varying according to the number of members.*

Figure 1 excludes groups that have a low degree of interconnection, that is, the graph does not show the isolated points of interconnection that have very little connection with the others in the graph. In decreasing the visibility of these sparse groups, one is able to identify the presence of three main groups, densely connected. We find, then, that the interactions among the WhatsApp groups described in Figure 1 are highly unlikely to have resulted from the

<sup>17</sup> The graph depicts the expressive presence of groups linked to a specific candidate based on sampling used. For more details, see the section on methodology above.

participation of common users in interest and support groups, since there is intense overlap of users in multiple groups that stem from different locations and that apparently reproduce similar content. Furthermore, if the degree of interconnection of the groups is so high, reaching the figure of 58 members, one clearly perceives the possibility of a structure of content dissemination and “viralization” that is poured into those groups that, once more, copies the broadcast model.

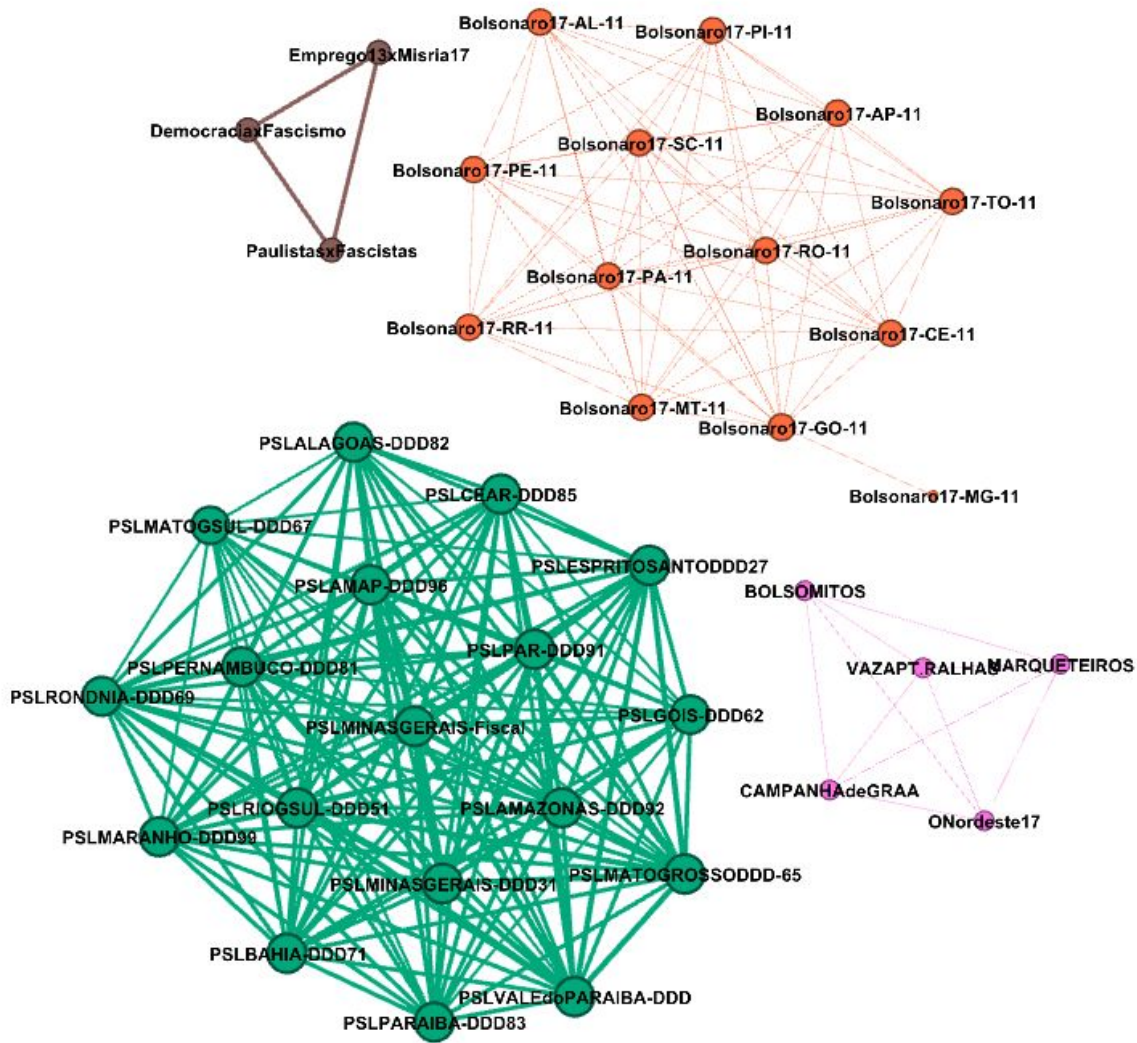
### **Analysis of the overlapping of administrators**

By visualizing the distribution and interconnection of group administrators, we can see that there is also an intense overlap at the level of group moderation. It is worth recalling here that, , among other powers, such moderators have the capacity to (i) exclude members permanently, (ii) determine which users have the capacity of participating in the group and (iii) include members of other groups without the user having requested such inclusion.

We found that, at the time of data collection, a number of groups shared up to 8 administrators among themselves. In total, there are 235 connections among the groups, where we identified at least 1 common administrator among them.

To illustrate the degree of interconnection of the groups at the level of the moderator, the graph below indicates all 55 groups with at least 1 connection.





**Figure 2: Social network graph of groups that have at least 1 administrator in common.**<sup>18</sup>

Connection model among groups that have at least one administrator in common. The nodes represent the WhatsApp groups and vary in size in accordance with the number of administrators that are shared with other groups; the edges indicate an administrator shared between two groups and vary in thickness according to the number of administrators in common.

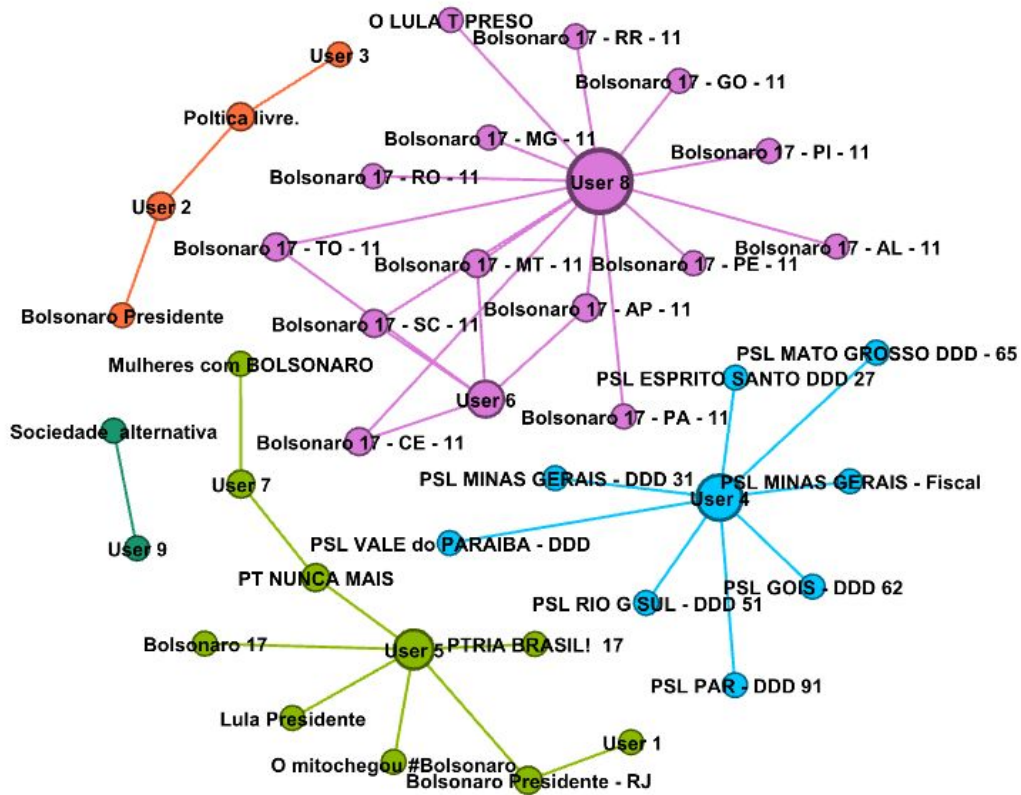
<sup>18</sup>The graph depicts the expressive presence of groups linked to a specific candidate based on the sampling used. For more details, see the section on methodology above.

**This shows that, contrary to what would be expected, single isolated groups are very rare. Instead, we see a prevailing structure of connections among the groups.** A few groups show only one or two connections and constitute an isolated pair in the map. In the majority of the cases, the groups are part of a greater web of administrators, which permeates huge blocks with multiple groups. It is worth noting also that the intensity of the connections reflects the number of shared administrators, with the thinnest line of intersection being equivalent to 1 administrator in common, whereas the thicker ones indicate 8 administrators in common.

**Our research identified 29 groups whose administrators reappear 10 times as administrators of other groups. In a specific case, we found that the same 4 administrators are the moderators of 17 other support groups of a same candidate.**

### **Analysis of content-disseminating users**

Finally, we analyze here the actions of the 10 most active users in monitored groups. We noticed that one does not find more than one information disseminating user in each group. These users are usually allocated among the different analyzed groups, which leads one to consider the existence of a strategic allocation of profiles of information disseminators, that operate as the source of the referred broadcast. In the 33 groups analyzed, we identified that at least 1 of these 10 information disseminating users and, in eight cases, there were 2 disseminating users. Just one of these users was found in 14 different groups.



**Figure 3: Social network graph of the 10 most active disseminating users in political groups.<sup>19</sup>**

*The model shows the penetration of the 10 most active disseminating users in political groups, as well as possible groups they share among themselves. Users are represented in the central nodes labelled “User,” the size of which varies according to the number of connections, and the groups are represented by the nodes that show the name of the group. One edge between a user and a group means that the user belongs to that group.*

This sample serves to illustrate the penetration of information disseminating users in political groups and how these users share groups among themselves. This analysis suggests that key members connect to multiple groups that form the WhatsApp debate spaces and thereby catalyze the spread of information and content, triggering the broadcast effect of given content intended to be transmitted.

<sup>19</sup> The graph depicts the expressive presence of groups linked to a specific candidate based on the sampling used. For more details, see the section on methodology above.

## FINAL REMARKS

**The 2018 Brazilian elections showed that the way to run election campaigns has changed.** If there was any doubt about the importance of digital platforms and computational power in the elections, the analysis done here demonstrated how much contact with information supplied by social media and instant messengers was determinant in spreading political propaganda in a unified manner. Unquestionably, Political Science, especially studies of electoral behavior which, until recently, treated the free electoral TV time slot and campaign financial resources as the main variables, will have an ever greater challenge to understand what the determining factors of the voters' choices are, given the complexity of modern political campaigns.

In spite of it being clear that social media and personal messengers have an important role in this scenario, in this report, **we specifically identified that there are strong elements of the use of automation to power the distribution of information among different groups on WhatsApp. We also identified that there is coordinated action among different members in their activities in the networks of discussion groups on WhatsApp.**

However, it is not within the scope of this study to say whether these identified elements were determinant for the success of the campaigns that adopted these practices. Conjunctural and sociological factors have great influence on candidates' performance, and we still know little about how these different variables interrelate.

As pointed out in the article "The science of fake news,"<sup>20</sup> fake news often has greater and faster reach and is propagated through more points of intersection on the network than true news, because it produces psychological stimuli that encourage their sharing due to a sense of newness and urgency of the information received. When the practices of groups specialized in computerized campaigns are revealed, as happened with Cambridge Analytica, we see that there are indications of use of techniques that employ these psychometric tools of propaganda, but we still know little about these practices and how they are used.

For this reason, studies such as this one are important to add elements to the configuration of these practices. With them we can also contribute to different institutions that are affected by this type of computerized propaganda. The political institutions are the ones that have the most to gain from a profound understanding of how the new mechanisms of

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<sup>20</sup> Lazer et al. The science of fake news. Science 09 Mar 2018: Vol. 359, Issue 6380, pp. 1094-1096. Disponível em <http://science.sciencemag.org/content/359/6380/1094>. Accessed on Oct. 22, 2018.

communication influenced citizenship and political persuasion, creating asymmetries of power not detected in the election campaigns. The construction of fair elections is one of the main values to be defended by democratic societies. Equally, the abuse of techniques that can unbalance the political game (upending the level playing field) can also lead to dysfunctionalities in democracy. It is important for society to be alert and equipped with information on these dynamics to be able to make stakeholders accountable and ensure democratic practices.

## **SHORT BIOGRAPHIES OF THE AUTHORS**

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