Polls, plans and tweets: an analysis of the candidates' discourses during the 2018 Brazilian presidential election

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ABSTRACT

Over the past years, Brazil has gone through movements of erosion of trust, and political scandals made room for new presidential candidates to arise, many fueled by a liberal agenda or pure and simple distaste for the legacy of the left-wing party that was in power. This led to a heated election in 2018, with 13 candidates facing off each other online and offline during the first round, fomenting passionate debates among a population of over 208 million with a vast online audience. In this context, a growing relevance of online campaigning appears, with the widespread use of social media by the candidates. By the means of a research methodology centered on discourse and quantitative analysis in politics, we discussed the converging and diverging patterns that emerged among election polls, comparing the online performance manifested on Twitter throughout the first round of presidential elections with the officially registered government plan. Our goal was to see if data visualization could help to explain the relevance of online campaigning in social media and how candidates reacted to the election polls and debates through posting on Twitter. The proposed research methodology and related tools can be used to perform the same type of analysis in future elections.

CCS CONCEPTS

• **Human-centered computing** → **Empirical studies in collaborative and social computing**.

KEYWORDS

Discourse analysis, presidential election, Twitter

1 INTRODUCTION

After becoming a republic in 1889, Brazil has had periods of military rule and Democratic governments in turns. In more recent history, the Democratic rule was restored in 1985, and the first free elections for president were held in 1989, nearly 30 years before the events discussed and analyzed in this text. At the moment of writing, there are over 30 political parties active in the country, 13 of which have presented candidates for the presidency in 2018[1].

Brazil is a country with great economic inequality, with a Gini index of 0,515. This was reflected in the previous presidential elections, with winning candidates coming from the economic and cultural elites, a tradition broken in 2002 with the election of Luís Inácio Lula da Silva from the Workers Party. After two successful mandates and the election of a successor, Dilma Rousseff, corruption investigations [9] led to the erosion of prestige among traditional political parties, culminating on the impeachment of the president Dilma Rousseff in August 2016 and the arrest of Luís Inácio Lula da Silva on April 2018, among other high-ranking political and business individuals.

These movements of lost of confidence and arrests made room for new presidential candidates to appear, many fueled by a liberal agenda or pure and simple distaste for the legacy of the leftist Workers Party. In this scenario, the 2018 Brazilian presidential election was hotly disputed. In the first round of the election, 13 candidates from all the political spectrum faced off each other online and offline, fomenting passionate debates among supporters and detractors among a population of over 208 million with a growing online audience. In 2017, the number of Internet users in Brazil represents 67% of the population 10 years old or older, and 77% of Brazilian Internet users are active on social networking websites[2].

This election showed a growing relevance of online campaigning, with the widespread use of social media by the candidates. As a special note on the relevance of online communication in this election, the candidate with the most prominent television advertising airtime, the center-right Geraldo Alckmin, did finish the election's first round on fourth place with only 4.8% of the votes, failing to reach the second – and final – round, disputed by Jair Bolsonaro (46.7%) and Fernando Haddad (28.3%). Another important factor to notice was the massive presence of Bolsonaro related-content in social media and message apps. The authors, then, were led to question if data visualization could help explain such phenomena. It is important to notice that television still plays an important part

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[1]http://www.tse.jus.br/eleicoes/eleicoes-2018/propostas-de-candidatos
[2]https://cgi.br/media/docs/publicacoes/2/tic_dom_2017_livro_eletronico.pdf

in informing brazilians, so debates and published polls still could have influence in the voters decisions.

With this context in mind, the authors aim to investigate what are the converging and diverging patterns that emerged among election polls, the online performance manifested on the top 10 candidates' Twitter profiles and each candidate's officially registered government plan throughout the first round of the election. Our hypothesis were: (1) the most active candidates in social media had advantage or presented more expressive growth in election polls; (2) candidates reacted to the election polls and debates through posting more often on Twitter; (3) through the course of the election, the government plans published diverge from the discourse on Twitter, showing the candidate's adaptations through the first round of elections, also related to polls and debates at the time being.

To answer the question and verify the hypothesis, a research strategy centered on a statistical analysis of the social media performance (defined by the number of followers, retweets and the tweets' content) and election polls results was elaborated. The remainder of this paper is organized as follows. Related works are presented in Section 2, methodology and results of our analysis in Sections 3 and 4, respectively. Finally, this paper closes with conclusions and future work directions in Section 5.

2 RELATED WORK

It was observed that there are many studies related to the use of social networks in electoral campaigns [8]. However, after analyzing these works, it was not found any research that addressed precisely the discourses pronounced by the candidates in person.

A significant number of works also focused mainly in the user's profiles [2], interactions [4, 6], discourses [3, 10] and sentiment analysis [5, 8, 11] regarding elections campaigns and episodes. Other researchers looked into automated forms of influence during the elections, such as social bots [7] and fake news diffusion. In Chatfield, Reddick and Choi [1], the authors addressed questions regarding how online news media used false news to frame the Trump presidential campaign negatively. The results indicate that although negative frames against Trump far outnumbered those against Hillary Clinton, they might have failed to influence the mass audience, leaving them to the power of Trump's direct political communications via Twitter. However, Trump's discourse was not analyzed in the dataset, leaving this hypothesis open, and a research gap that the present work aims to address.

Concerning comparative analysis (thus, closest in method to the present investigation), it could be found the research of Chou and Roy [2], in which the authors sought to examine whether the emotional vocabulary of political news stories can lead to their popularity. They constructed a corpus of 2,650 articles from 12 different news publications over five months, connected with the 123,113 tweets by 20,964 Twitter users that share them. They automatically code stories for emotionality and positivity. However, in the present work, election polls, government plans, and the candidate's tweets during the first voting turn of the 2018 Brazilian presidential election are compared in order to discuss the converging and diverging patterns emerged.

3 RESEARCH METHODOLOGY

This section presents an overview of the research methodology, including an explanation of data gathering, and how the quantitative data was used. A detailed description of the visual analysis, as well as insights, are presented in the next section.

As a way to define a relevant sample, it was decided to analyze the data from the top ten candidates according to their votes on the election's first round, a choice that represents 99,88% of the votes. These ten candidates are, from the most to the least voted, Jair Bolsonaro, Fernando Haddad, Ciro Gomes, Geraldo Alckmin, Marina Silva, João Amoedo, Cabo Daciolo, Henrique Meirelles, Alvaro Dias, and Guilherme Boulos. Methodology consists of three steps: (1) Data collection, (2) Generation of graphic visualizations, and (3) Analysis.

In the first step, four different types of data were collected:

- Ten most voted candidate's Twitter official performances (data collected from 08/16/2018 to 10/6/2018 - period between the day the candidacies were publicly presented and the last day before the first round): number of followers (first and last day of data collection), total number of likes and retweets, and tweets from each candidates (content);
- Government plans (data collected in 08/01/2019): PDF version of Government plans of all candidates[3];
- IBOPE[4] election polls (data collected in 08/01/2019): 8 polls carried out and published on August 20th, September 5th, 11th, 18th, and 24th, October 1st, 3rd and 6th;
- Debates in public television with national distribution (data collected in 11/01/2019): Dates, broadcasting TV station and debate participants (total of 6th debates carry out on August 9th, 17th, September 20th, 26th, 30th, October 4th).

To perform the data collection, Python scripts for recording of Twitter data and to generate statistical data as the total of retweets and likes were developed (the scripts are available at GitHub[5]). Table 1 summarizes the quantity of data of each dataset, according to the ranking in the first round.

Table 1: Summary of the candidates' collection

Candidates	Tweets	Sum of RTs	Sum of Likes	# Words in Gov. Plans
Bolsonaro	360	1.869.008	8.498.090	8.009
Haddad	732	360.751	1.342.725	31.237
Ciro	1.106	623.163	2.993.718	18.067
Alckmin	473	62.683	262.365	1.355
Marina	501	148.360	667.595	15.656
Amoedo	1.224	417.723	1.907.479	4.235
Daciolo	48	79.257	265.759	4.883
Meirelles	3.467	11.834	49.790	3.791
Alvaro	1.099	24.210	97.235	2.447
Boulos	836	305.635	1.227.585	66.743

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[3]http://www.tse.jus.br/eleicoes/eleicoes-2018/propostas-de-candidatos
[4]http://www.ibopeinteligencia.com/
[5]https://github.com/DAVINTLAB/TweetUtils

The second step, generation of graphic visualizations, consists of making sense of all gathered data, crossing them with each other. Microsoft Excel was used to build the graphic representations on the Twitter and IBOPE Election Polls data. The tag clouds were made with and WordArt online tool[6].

After making sense of the gathered data, the third step was the analysis. The analysis was separated into two broader themes: analysis of discourse content and quantitative analysis. It is essential to understand the contextual nature of the candidate's discourse, in order to understand their political agenda first, to make sense with the quantitative data later on.

4 VISUAL ANALYSIS

The use of data visualization allows the observer to identify emerging patterns in a glance from datasets as well as its diverging aspects, enabling qualified discussions about abstract themes. In this section, the order of visualizations presentation is the same as each candidate's ranking on the first round of the election. As stated in the methodology, first the discourse content analysis is presented, followed by the quantitative analysis.

4.1 Discourse content analysis

Two specific visualizations were developed comparing the number of words between the candidate's government plans and tweets. After removing the stopwords, as described previously in the methodology, the tag clouds illustrated in Figure 1 were produced. As for the result, some words gained relevance in the tag clouds: Substantives, such as Bolsonaro, Lula, Brasil, Deus, Governo e Política (in English: Bolsonaro, Lula, Brazil, God, Government, and Politics); Adjectives: Forte, Pública e Junto (or Strong, Public and Together); Verbs that do not demand to be attached to other sentence elements to have full significance: Vote and Vamos (or Vote and Go) and Hashtags used on Twitter-based rallies, such as Cirosim, Equipeja e DiaB (or YesCiro, NowTeam, DayB).

When comparing the government plans, the word Brazil was the most recurrent. However, it draws attention that the government plans that had the highest count of the mentioned word belonged to candidates that present an ideological orientation closest to right-wing bias (Bolsonaro, Alckmin, Amoedo and Meirelles). A similar case can be observed with the word Política (or Politics), where the candidates closest to the left-wing bias used it most (Haddad, Ciro, Marina and Boulos).

Jair Bolsonaro had the word Brazil as most recurrent, followed by Abraço (or Hug) and Obrigado (or Thank you). In contrast, Fernando Haddad had the name Lula as the most frequent word, honoring Brazil's two-time ex-president and the political godfather of Haddad. Because of Lula's arrest earlier on the campaign, was not able to take part in the elections even if Lula's image mostly maintained Haddad's campaign afloat during the first round.

Also apart from the others, Cabo Daciolo had Deus (or God) as most common word in his discourse on Twitter. One of Daciolo's main characteristics during the campaign was his religious devotion. In the debates, for example, he frequently appeared with a Bible in his hands, proclaiming religious speeches.
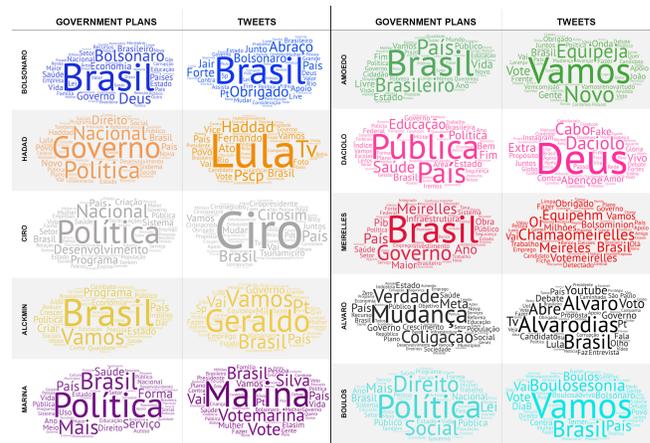
[6]https://wordart.com/

Figure 1: Tag clouds: Government Plans x Tweets.

After analyzing the discourse content, the following visualizations concern the quantitative data gathered: Candidate's Twitter Profiles (number of followers, interactions and tweets), and IBOPE election polls.

4.2 Quantitative analysis

The variation of the number of followers of each candidate depends on many factors, but, mainly, of the engagement that each post causes in their electorate. This is related to the number of posts made, which are summarized in the Figure 2. From an observation of the lines that represent the number of posts, it can be seen that the frequency is not linear, being organized in peaks motivated by the themes of the campaign discussed at each moment. Another recurring pattern is that eight of the ten candidates focused on Twitter posts on the last days before the election, seeking to mobilize affiliates, although such movements have not decisively changed the outcome, favorable to Bolsonaro. The candidates Amoedo, Meirelles and Álvaro Dias were the only ones who presented peaks of tweets before the release of the latest polls, with Meirelles having the peak of posts during the first days of the campaign.

One way it was chosen to evaluate the engagement of candidates with their followers was the absolute number of likes and retweets over the first round. Figure 3 illustrates this sum, showing how the reaction of the supporters of the candidates and the online audience can differ to what the electoral surveys present. In both criteria, the candidate Bolsonaro was the winner in the number of likes and retweets during the first round, opening a near triple advantage over the second place. However, although the polls pointed Haddad as its main competitor, according to data collected in this research, his opponent would be Ciro Gomes, who placed third in the polls. On the repercussion of posts, Haddad lost to Amoedo and was almost tied with Boulos, which indicates that the proposals of government presented by him did not gain traction even facing marginal candidates to the left and the right.

For a more in-depth understanding of the frequency of candidates' publications, it was decided to compare them with the results of the electoral surveys according to IBOPE research institute. The intention with this comparison is to check if the launch of the
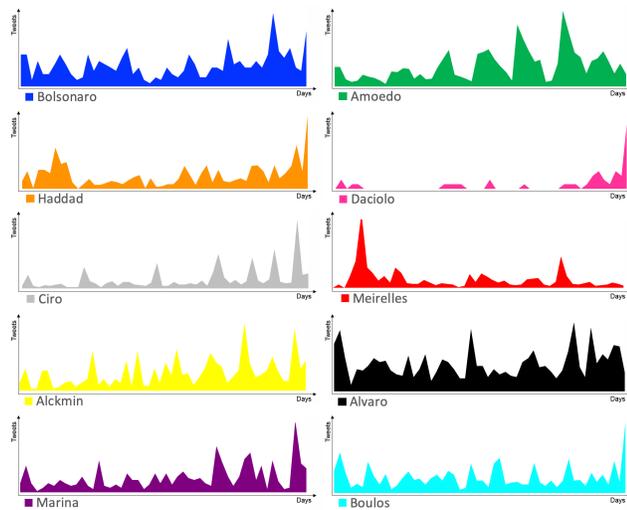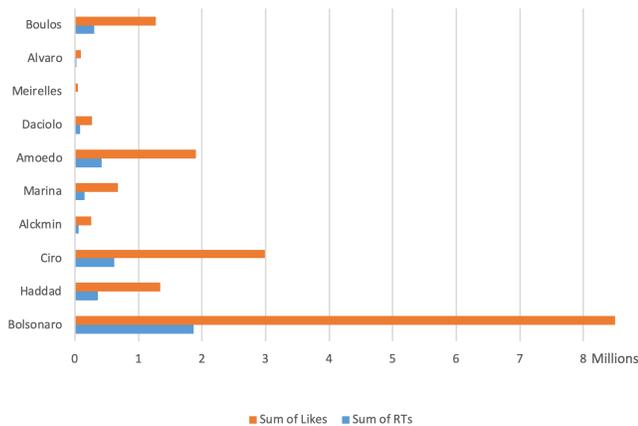
Figure 2: Tweets per day.

Figure 3: Candidate's likes and retweets over the first round.

election polls are in any way related to the frequency of the candidate's posts. Figure 4 shows the percentages of each candidate in the respective surveys. Due to the fact that the election polls cover different time spams, it was necessary to put in proportion the quantity of collected tweets and retweets, because the longer the intervals are, the volume of twitter data could possibly be higher. For example: if a poll had a month of interval between the other, there would be more time available for the candidates to tweet and for the followers and other users to react to it. Thus, it was made an average of collected tweets according to each period, being this average represented by the respective percentage of all the collection.

It is remarkable that the candidate Bolsonaro, the eventual winner, led all election polls while showing constant growth. Marina Silva presented the most significant drop during the timeframe as Haddad had considerable growth in the polls, going from the 5th to the 2nd position from the 4th electoral survey onwards. The other
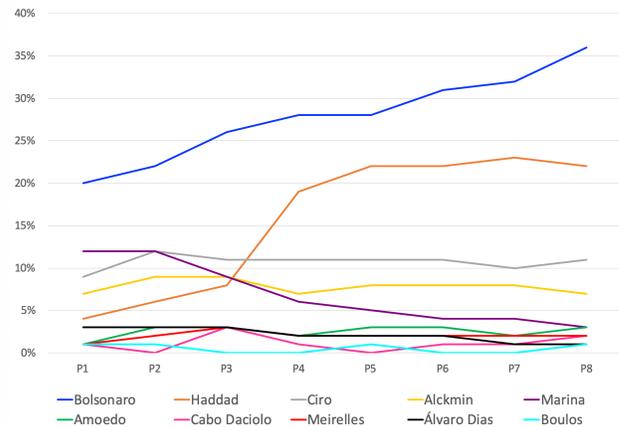

Figure 4: IBOPE electoral polls during the first round.

candidates had a variation that can be considered more constant, alternating ranks on the bottom of the graph.

The polling, a traditional staple to many democratic elections, led us to question how such shifts were expressed on Twitter in the form of changes of followers, and the amount of likes and retweets. Figure 5 represents the variation of the total number of followers of each candidate from the first and last day of collection, whereas the red line indicates how much the amount has changed. A pattern of consistent behavior is that no candidate has lost followers throughout the election, although the increase may have been modest. The first element that the chart suggests is that the candidates spoke to disproportionate audiences, separated into two strata that separated the top five from the others. The first point off the curve that could be highlighted is the candidate Marina, who held the highest number of followers across the election, but has grown little throughout the campaign, suggesting that she continued to talk only to her base and was unable to expand her appeal to other voters. Something similar happened with the candidate Alckmin, who also grew little during the first round.
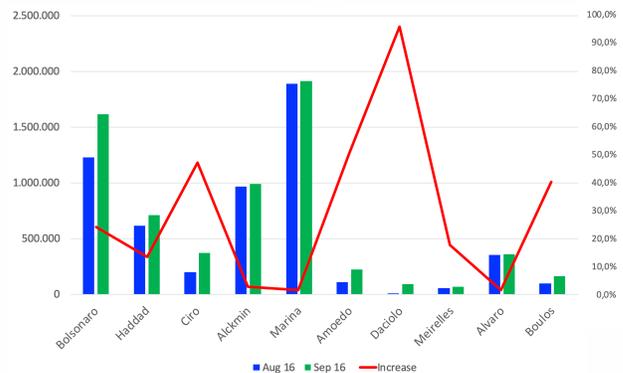

Figure 5: Variation of the total number of followers.

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Poll leader and eventually elected president Bolsonaro stands out on the chart for having the highest growth of absolute-number followers during the first round. Although proportionately his growth stands below 30%, this number indicates his growing acceptance by the voters. Candidates such as Amoedo, identified with liberal approaches to the economy, Boulos, defending traditional issues of the left and Ciro Gomes, proposing a renewal of the left, increased their network by at least 40%. However, none of the candidates had a higher growth than Daciolo, a figure who stood aside from the crowd, serving almost like comic relief to the other candidates with his blend of faith and patriotism. Although Daciolo nearly doubled his followers, the quality of the debate around him was not taken seriously by most voters.

From that method, it was possible to elaborate Figure 6, where it is presented the percentage development among the IBOPE election polls (red line), total number of tweets (blue line) and retweets (green line). The tags P1, P2, P3 and so on represent the release dates of the polls, and the lines represent the amount of tweets in that period. This graphic makes it possible to observe relations between the development of each dataset.

It can be perceived a relation between the considerable IBOPE growth and the amount of tweets and retweets in some candidates. This election ended up being stratified between three sets of candidates: those who reached the second round (Bolsonaro and Haddad), those who arrived at a plateau (Ciro, Alckmin) and the remaining others. When investigating the online movement concerning the oscillations of the polls, it is possible to observe some strategies that are not always successful on the part of the candidates and their advisors.

The first one is to try to motivate undecided voters through a turnaround, creating the perception of an impulse-driven crowd. The characteristics of this, as observed, is a marked increase in the number of posts and retweets in the final stretch, a strategy used by Ciro, Alckmin, Marina, Daciolo, and Boulos. A second is a kind of "acceptance of the defeat" noticeable in Amoedo, Meirelles and Álvaro Dias. In these cases, the number of posts remains stable or falls in the final stretch, accompanied by few retweets, which suggests that the candidate is communicating only with the previously defined base of their voters.

In this sense it is possible to highlight once again a visual pattern of the success of the candidate Bolsonaro: in addition to showing continuing growth in the polls, he is the only candidate whose retweets continued to grow steadily throughout the researches without a direct push by an increase in postings. Its direct competitor, Haddad, manifested a reverse behavior, increasing the rate of publications without having its repercussion grow in the same magnitude.

It is important to notice that the short interval between the last three election polls (only two days from one another) could have influenced in the higher social media activities. Furthermore, other relevant factor that probably has influenced the Twitter activity growth was the last debate, that happened on October 4th, broadcasted by Globo Network (the largest television broadcast network in Brazil). It has registered the largest audience among other debates, broadcasted in other channels. The same fact can explain the low activity in the same period on Amoedo and Daciolo's Twitter

profiles, since they did not took part in the debate. However, Bolsonaro's profile had the opposite outcome, even though he did not participate in the debate either. This can be explained by the fact that his whole campaign was based on internet strategies on social media and because another TV network, supportive of Bolsonaro (Record TV), broadcasted an exclusive interview with him at the same time of the last debate[7].

The visualizations and analysis presented in this work show some relations between the candidate's Twitter accounts, government plans' discourses, election polls and TV broadcasted debates. In the perspective of internet as a cultural artifact, it is crucial to notice that social media and other online platforms are still intrinsically related to traditional media. However, because of the features of those platforms and target audience, the discourse can be adapted to fit the social media's format.
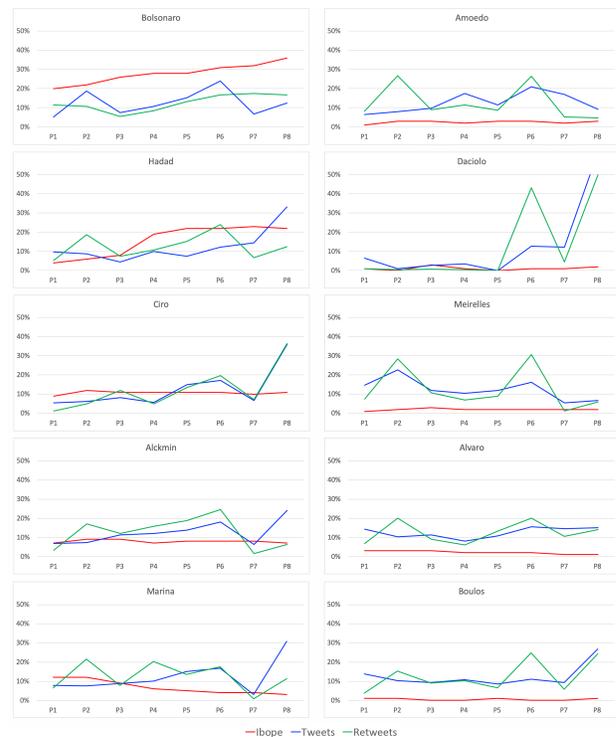

Figure 6: IBOPE election polls, tweets and retweets.

5 FINAL CONSIDERATIONS

The recent Brazilian political scandals favored the rise of new candidates and emerging parties to dispute the 2018 presidential election. In a country where the population is active on social media, this dispute was highly debated through them.

One point that was evident from the analysis and data collection carried out in this article is that there is a likeness between the electoral polling conducted by traditional research institutes and the spontaneous behavior of people in social networks. In none of

[7]https://noticias.uol.com.br/politica/eleicoes/2018/noticias/2018/10/05/fuga-debolsonaro- ditadura-e-pedido-de-compostura-veja-frases-do-debate.htm

the observed cases, uncontested online leadership diverged from the results of the polls. This trend was stressed by the overwhelming success of the candidate Bolsonaro in the number of likes and retweets on his account. However, aside from the top spot, the analysis indicated that the reader's points of view and online voice behaved in a more complex and often divergent way from the percentages of polls or election results. That said, we could not confirm hypothesis (1) that being most active on social media meant a guaranteed advantage for the candidate in election polls, implying a more elaborate discussion. The size of each candidate's network reach is an essential factor, to be analyzed on further studies. Also, regarding hypothesis (2), it could be observed that by posting more often the candidates sent mixed signs in social media, either rallying for victory or "accepting defeat"Ï towards the day of the vote.

Significant differences were also detected between the content posted in each candidate's government plan and their Twitter account. It was possible to note that the Twitter stream highlighted mentions of the candidates' names in nine of the ten presidential hopefuls, instead of words related to their government proposals. That difference emphasized the nature of social network communication that often generates a sense of presence and a proximity effect between voter and candidate. Therefore, hypothesis (3) could be confirmed, because the discourses diverged as the election campaign advanced. However, it is a more complex issue to find relations between the discourse content and the quantitative analysis of social media performance, leaving spaces to be still unveiled.

The presented analysis helps to discuss the converging and diverging patterns that emerged in this scenario, as well as the proposed research methodology and related tools could be used to perform the same kind of analysis in future elections. As a limitation, it can be highlighted that the analysis of the government plans was done only through the sum of word frequency, and not through more in-depth discourse analysis. It is intended to deepen it as future work, compare the new results with the already generated word clouds. Another possibility is to analyze the tweets' discourse, to understand, for instance, which one enables a greater engagement (likes or dislikes).

The analysis could also be extended beyond the government plans and candidates' tweets, including the discourse of the debates. Including alternative perspectives could help us to better understand candidates opinions, promises, as well as the voter's engagement.

ACKNOWLEDGMENTS

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